December 23, 2010

Mr. Joe Yun
Program Manager
Department of Water Resources
901 P St, Room 213A
Sacramento, CA 95814

RE: Comments on Draft Staff Funding Recommendations for Proposition 84 IRWM Planning Grant Proposals

Dear Mr. Yun,

On behalf of the 30 agricultural water districts, municipalities, disadvantaged communities, and other public entities that comprise the accepted Westside – San Joaquin Integrated Regional Water Management Region (Westside), I am writing to convey our shock and dismay over staff recommendation to not fund the region's Planning Grant Proposal (PGP).

For nearly 20 years, the Westside has borne the disproportionate brunt of the rededication of managed water supplies due to changes in State and federal regulations. The result is that many of our members can now expect to receive only 35 – 40% of their surface water supply allocations annually on average. This loss of surface supply has lead to more reliance upon groundwater resources and this growing dependence affects every water purveyor within the region. In addition to dwindling supplies, the loss of surface water has compounded the effects of the current and severe economic downturn. Many municipalities within our region are now experiencing up to 40% unemployment and increasing demand for social services at a time when much needed funding is scarce. These factors have all contributed to the Westside being among the most socio-economically depressed regions in all of the country.

In response to the changing regulatory climate, the Westside began developing its first integrated regional water management plan over a decade ago to maximize the effective and efficient use of intra-regional water resources. Since that time, the Westside Integrated Water Resources Plan (WIWRP) has undergone three major revisions, the last being formally adopted by the San Luis & Delta-Mendota Water Authority's Board of Directors in May, 2006. The Water Authority has a long history of successful planning, project development, and project implementation intended to achieve the established objectives of the WIWRP[1]. In support of these efforts, the Water Authority has secured and administered tens of millions of dollars of State, federal, and local funds, all controlled by the strictest of accounting standards.

[1] WIWRP Objectives Attached

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In 2007, the Water Authority began the 4th revision of the WIWRP by meeting with DWR staff to solicit information on potential changes to DWR's Integrated Regional Management Program as a result of passage of Proposition 84 and 1E by California's voters in November 2006. In response to this and other advice we had received on the WIWRP, we began our efforts to expand participation in the plan, to revisit plan strategies and priorities, and to make other improvements. In 2009, we participated in DWR's Region Acceptance Process and were designated an "approved" region without condition. Also in 2009, we began soliciting participation in the WIWRP revision from over two dozen municipalities and disadvantaged communities, flood control agencies, state and federal agencies, and environmental justice groups within our region and sphere of influence. To date, WIWRP participation has been expanded to now also include 1 municipality, 3 disadvantaged communities, 1 resource conservation district, and 2 non-governmental organizations. All of these efforts to revise the WIWRP and to solicit and coordinate expanded participation have occurred at the Water Authority's direct expense.

In spring 2010, the Water Authority began hosting stakeholder meetings, which included participation by DWR staff, to develop the institutional mechanisms necessary to facilitate expanded participation in and governance of the WIWRP revision and to review existing plan strategies and priorities and establish new ones if warranted. As a result of our outreach, the Water Authority has received 53 new planning and project implementation proposals that exceed $1,000,000,000 in estimated costs. This is in addition to the 12 water management strategies currently in the WIWRP. Clearly, years of disproportionate, adverse regulatory impacts and political underrepresentation have lead to a tremendous backlog of much needed public works projects to repair aging infrastructure, to cope with new, increasingly stringent regulatory standards, and to meet the consumptive needs of a growing population. In these times of declining revenues and increasing need, programs like the Integrated Regional Water Management Grants are an essential tool to aid impoverished regions like the Westside to do what they otherwise cannot accomplish alone.

To this end, the people of California in passing Proposition 84 found[2] and declared that, "it is necessary and in the public interest to do all of the following:

a) Ensure that safe drinking water is available to all Californians by:
    2) Assisting small communities in making the improvements needed in their water systems to clean up and protect their drinking water from contamination.
    3) Provide grants and loans for safe drinking water and water pollution prevention projects.
    5) Assisting ***each region of the state*** [emphasis added] in improving local water supply reliability and water quality.
    6) Resolving water-related conflicts, improving local and regional water self-sufficiency and reducing reliance on imported water."

[2] Excerpts from Public Resources Code, Division 43, Chapter 1, Section 75003

The people of California intended the funds provided by Proposition 84 to be distributed throughout the State with emphasis given to small and disadvantaged communities, and yet a review of DWR's draft funding recommendations clearly indicates that much of the San Joaquin Valley, and the entire Westside, are to be passed over for planning grant funding[3].

In August 2010, DWR issued the Program Proposal Solicitation Package (PSP) for the first round of the Planning Grant applications. The PSP established a September 28 deadline, eligibility requirements, application instructions, and review and scoring criteria. Water Authority staff and consultants reviewed the PSP with our WIWRP stakeholders and where questions arose addressed them through direct communications with DWR staff in attendance at WIWRP stakeholder meetings, DWR sponsored workshops, and through telephone or e-mail personal communications. As a result of these continual solicitations of guidance and advice from DWR staff, the WIWRP stakeholders were confident that the PGP submitted on September 28 met DWR's expectations and all of the established criteria. Needless to say, we were quite surprised by the comments provided in the one-page PGP evaluation summary. Our specific responses to those comments follow:

- **Work Plan:** "The work plan does not fully meet the PSP criterion. It does not adequately address the issues and lacks sufficient documentation. Specifically, the work plan is not presented in logical manner or in enough detail. The project prioritization task 3 is unclear whether the existing plan needs to have prioritization process revised or just new projects prioritized and incorporated into project list. Update task 4 description seems to be a duplicate of task 3. Update task 5e, is unclear whether there is a need to change region boundaries. The section on Planning Study for DAC is contradictory to task 2 which described over $100 million of projects complied from survey results. For the Topic Specific Regional Studies it was unclear whether these study projects are included in the existing IRWM as high priority projects."

  The PSP provides no specific example of criterion or what is deemed "sufficient documentation" and "enough detail". The PSP simply provides categorical descriptions of required elements and states, "The work plan shall contain all the ***necessary*** [emphasis added] details to show the process the applicant will take to move forward with or complete the IRWM Plan." What is sufficient detail was a question that arose through our stakeholder review of the PSP and put to DWR staff. Staff indicated that DWR anticipated many planning grant applications and so was not looking to receive reams of material, which would hamper the review process; rather, they were interested in clear and succinct planning proposals that conveyed the "necessary" information. We believe our PGP is responsive to this guidance.

  On Task 3, Integrate/Prioritize Projects, the evaluation asks if the work plan intends to revised the existing WIWRP prioritization process or just reevaluate

[3] Map Attached.

the existing priorities. The PGP clearly intends to do both. In the background section, the PGP reports the prioritization process of the existing WIWRP; however, as part of the ongoing revision to the existing plan, planning participation has been expanded thereby necessitating consideration of the established process and priorities.

As for Task 4, Conduct Stakeholder Meetings, the evaluation suggests the PGP presents a duplication of Task 3, Integrate/Prioritize Projects. While the PGP expresses some overlap due to the fact that the evaluation of the established prioritization process and priorities will be conducted in open stakeholder meetings, Task 4 is clearly far more expansive than just that and goes on to describe the purpose of the task as to solicit stakeholder input on all aspects of the WIWRP's revision as well as on grant applications preparation and other relevant topics.

On Task 5e, the WIWRP revision will include expansion of the current regional boundary to reflect new participation in the planning effort.

As for a perceived contradiction between Task 2, Perform Outreach to Regional DACs" and the Planning Study for DAC, we fail to see the inconsistency. Task 2 describes an outreach effort and conveys information provided through survey results. However, the $100 million of ***project*** costs identified in the surveys conducted as part of our outreach effort are clearly different from the $200,000 target specifically for DAC ***planning*** as proposed in the PGP.

For the Topic Specific Regional Studies, the evaluation asks if the studies are included in the existing WIWRP as high priority projects. They are not. As stated in the PGP, these studies are intended to establish the feasibility of potential projects. The information garnered from the studies will then inform WIWRP stakeholders as to whether or not the potential project warrants inclusion in the plan and, if so, its prioritization.

As for the "logic" of the presentation, the PGP follows the order of required elements as they are laid out in the PSP.

- **DAC Involvement:** "The work plan provides a task for facilitating and supporting DACs as it includes strong involvement and focus on DACs. However, there is no sufficient detail in the work plan involving two Environmental Justice groups. Also, in the update to IRWM it is unclear what the DAC outreach will actually entail."

  The PSP provides no guidance on describing the involvement of Environmental Justice (EJ) groups in the planning grant proposal. In fact, the phrase Environmental Justice is not even in the PSP. In the PGP, we have provided the same level of information regarding EJ participation as we have for DACs. That is to say, they are not named specifically but we do describe an ongoing

program to solicit their participation, we state that to date two EJ non-governmental organizations have expressed their willingness to participate in the WIWRP revision, and conclude by saying that further EJ and DAC participation will continue to be encouraged throughout the plan revision process. It is unclear to us from either the PSP or PGP evaluation what other information DWR expected.

The PGP states that the Water Authority has already initiated an outreach effort. While the PGP does not go into great detail, it is clear that outreach has been accomplished through a mix of written survey solicitations and personal communications. We have found these strategies most effective and will continue to pursue them. A draft report[4] of this effort has been prepared and the final report will be included in the WIWRP by the time the current revision is re-adopted. The PGP is also clear that the efforts have already produced results, as indicated by the survey results and need to provide planning resources, and that these efforts will continue, as exemplified by the PGPs proposal to use Proposition 84 planning grant funds to, "Perform [additional] Outreach to Regional DACs", "Conduct Stakeholder Meetings", "Ensure effective DAC outreach has been accomplished" and to "Consider[s] expanding the regional area to include additional DACs and other areas not currently included in a planning area."[5]

- **Schedule:** **"**The schedule does not present information with adequate documentation and hence, deemed incomplete and insufficient. For example: the schedule lacks detail with respect to task milestones and completion dates. The schedule does not detail key parameters to determine if the schedule is reasonable."

  The PSP provides no example at to what is a complete or sufficient level of detail. The PGP provides a schedule that aligns beginning and end work dates with the proposed planning efforts by category. As stated above in the Work Plan response, the Water Authority conferred with DWR staff as to the level of detail desired and based upon that guidance provided summary level information. For the proposed Topic Specific Projects, each planned study has behind it a detailed work plan that is drawn upon to provide the summary level descriptions provided in the PGP. This material was always available and could easily have been provided if review staff had any questions or concerns. We provide that material with this comment letter in order to assist you in re-assessing the adequacy of Westside proposal as you finalize your decisions.

  With respect to the DAC proposed studies, as explained in the PGP, no planning study detail is currently available. The disadvantaged communities that we intend to aid in their planning efforts are in no fiscal or staffing position to be able to develop the level of detail that DWR staff is seemingly suggesting is

[4] Draft Report Attached
[5] PGP Tasks 2, 4, 5c and 5e, respectively.

necessary, particularly within the roughly 60 day timeframe DWR provided between the issuance of the PSP and deadline for planning grant proposals.

However, the DACs know their needs all too well and the reality of their capabilities should in no way be an impediment when determining the merits of the planning proposal. In fact, the Proposition 84 and Proposition 1E Guidelines, also issued in August 2010, make clear that exceptions will be made when considering whether or not to assist DACs. Further, the Guidelines clearly state, "Because DACs may not have a developed project to put forward, the types of eligible projects to address critical water supply or water quality needs of a DAC are expanded. Eligible projects in direct support of DACs include feasibility studies that may lead to a construction project to address DAC needs; engineering designs and specifications; or needs assessments where a critical water supply or quality issue is perceived but specific needs have not been determined." The PGP Planning Study Projects for DACs are aimed exactly at advancing these goals.

- **Budget:** **"**Not all tasks seem reasonably budgeted and the tasks do not follow the work plan clearly. In addition, there was insufficient detail to justify the reasonableness of the costs. Furthermore, the budget lacks hours and rates. Examples include a single budget amount included for the 2nd Element: Planning Study Projects for DACs, with no budget for each task or how they derived the budget estimate."

  Our comments on DWR's staff evaluation of budget material presented in the PGP mirror those that we just provided on schedule. Supplemental materials are hereby provided to assist in your re-assessment of staff recommendations toward final decision making. These materials have been available and would have been easily and quickly provided to review staff upon request. Again, we believed staff preferred to query planning grant proponents on issues of concern as opposed to being inundated with volumes of detailed materials, which we could have easily done.

In closing, we offer a couple of general observations. First, in terms of the evaluation, we found the greater level of detail and the articulation of what was on mark and what was not, that was provided as part of the Proposition 50 proposal evaluations to be a far more useful tool than the approach used here. While the consideration of these planning grant proposals may not be the most important part of DWR's IRWM program mission, these proposals are vitally important to the proponents that have invested so much in there development and submission. It seems they deserve a bit more than a <350 word response.

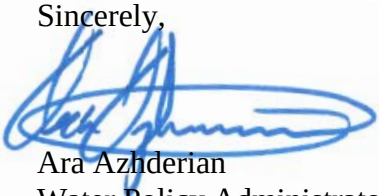
Second, the role of IRWM regional liaison should be more clearly defined and potentially expanded. Our liaison has been a great information resource and we have appreciated his participation in our stakeholder meetings. However, it appears this role is unidirectional. We believed, given the title, that regional liaisons would have been a

resource to reviewers to convey information from the region to DWR review staff about the proposal when questions arose. It is our understanding now that this is in fact not the case and so we would suggest that in future evaluations the liaisons be allowed and directed to provide this important bi-directional information service.

Third, a review of the highest scoring planning grant proposals indicates that those proposals focused primarily on updating or finalizing existing IRWMPs. While we recognize the importance of planning for planning sake, our PGP emphasizes planning efforts intended to enhance the regional planning scope by proposing to study previously unidentified potential water management strategies and to increase eligibility for future implementation grant funding opportunities. We deliberately targeted 90% of our planning grant request on plan strategy enhancement and eligibility issues because of the clear and immediate needs of the region to cope with chronic and worsening water supply sufficiency, quality, and reliability. We only proposed to dedicate 10% of the planning grant funds upon our ongoing WIWRP revision efforts with the balance continuing to be funded directly by the Water Authority membership. To better understand the evaluation process, we have requested that all grant proponents be provided any direction given reviewers with respect to how to evaluate the planning grant proposals and what considerations, if any, where given greater emphasis.

Thank you for this opportunity to provide our comments. On behalf of the Westside, I convey to you our deep hope that the information provided herein will result in a more favorable decision regarding our planning grant proposal. The Westside has been long beleaguered and is desperate for assistance in addressing these important planning activities. I am gladly available should you have any questions regarding this letter, our PGP, or the Westside Integrated Water Resources Plan in general.

Sincerely,



Ara Azhderian
Water Policy Administrator
San Luis & Delta-Mendota Water Authority

CCs:
Mark Cowin – Director – Department of Water Resources
San Joaquin County Board of Supervisors
Stanislaus County Board of Supervisors
Merced County Board of Supervisors
Fresno County Board of Supervisors
Kings County Board of Supervisors
Cities of Patterson, San Joaquin, Avenal, and Firebaugh
Westside Integrated Water Resources Plan Stakeholders

SECTION C: PLAN OBJECTIVES

C.1.1 REGIONAL OBJECTIVES

The 2005 Westside Integrated Water Resources Management Plan is a Regional blueprint that guides resource management in the context of environmental and socioeconomic factors. The Plan identifies alternatives to reduce the imbalance between water demand and supply while improving environmental and socio-economic status through a series of drainage, flood control, groundwater management, land use, water conservation, water quality, water supply, water use efficiency proposals. The overarching goal of the Plan is to minimize Regional conflict by addressing the most problematic sources of tension affecting our agricultural, municipal, and environmental water use, namely water supply reliability, drainage, and water quality.

The Plan's evolution over the last several years has been iterative and driven by stakeholder interest in minimizing Regional conflict while maximizing resource efficiency and effectiveness. The Plan is reactive to the ever changing regulatory climate, such as implementation of the CVPIA, water quality regulations in the San Francisco Bay/Sacramento-San Joaquin Delta (the Delta or Bay-Delta), and ESA provisions, all of which have significantly reduced CVP water supply reliability in the region, while remaining responsive to the progressive needs and imaginations of the local stakeholders.

In attempting to alleviate the chronic water shortages faced by the region, the Water Authority recognizes the importance of employing a variety of water management strategies. Given the Water Authority's diverse membership, it becomes imperative to Regionally address multiple opportunities and needs simultaneously. For example, ameliorating water shortages requires pursuing supply augmentation, conveyance expansion, groundwater management, storm water management, conservation, recycling, conjunctive use, water importation, surface storage, and transfers concertedly, as no single solution can sufficiently close the water supply gap. In addition, as opportunities are realized, consideration must be given to how best balance a project's benefits so as to attend to the diverse obligations of our membership to provide water supply reliability, habitat protection, recreation, water quality improvement, and wetlands enhancement. In this regard, each project becomes an equation carefully calculated to match the opportunities created by some stakeholders with the needs of others.

The State has developed a series of water management strategies and desired outcomes that are closely aligned with the objectives of the Region. Many of the items on that list are actions we have already undertaken and intend to further advance through continued implementation of the Plan. To illustrate the similarities this Plan examines the parallel between the State's goals and our Regional objectives.

C.1.2 Ecosystem Restoration

Objective #1: Provide reasonable opportunity to advance ecosystem restoration through balanced project implementation.

Examples from the Plan include: The San Joaquin River – DMC Pipeline Connection will provide operational flexibility essential in minimizing Delta conflict associated with fishery restoration efforts. The Westside Regional Drainage Plan eliminates agricultural discharge to the San Joaquin River thereby improving water quality in the affected ecosystem. The San Luis Reservoir Low-Point Improvement Project, though currently only in the appraisal phase, has scoped new ecosystem restoration potential.

C.1.3 Environmental and Habitat Protection and Improvement

Objective #2: Develop Regional solutions that protect environmental and habitat concerns and provide potential for improvement.

Examples from the Plan include: The Level 2 & Level 4 Refuge Water Supply Diversification Program will develop new and predictable water supplies through well development to provide water critical for wildlife habitat cultivation within the Region's refuges. The Pleasant Valley Groundwater Banking could provide storage for surplus supplies held by federal or state wildlife agencies for later extraction. The Westside Regional Drainage Plan will eliminate agricultural discharge to the San Joaquin River improving the quality of habitat along its course.

C.1.4 Water Supply Reliability

Objective #3: Improve south-of-Delta water supply reliability by an average of 25%.

Examples from the Plan include: The Westside Regional Drainage Plan furthers conservation through source control and water use efficiency, water recycling through recirculation and blending of drain water for primary irrigation purposes, and supply development through water treatment. The San Luis Reservoir Low-Point Improvement Project maximizes the operational flexibility of the existing facility by eliminating non-structural constraints. The Westside Surface Storage Reservoir Project provides an essential buffer against dry year shortages by preserving the utility of wet year supplies.

C.1.5 Flood Management

Objective #4: Minimize risk of loss of life, infrastructure, and resources caused by significant storm events by utilizing uncontrolled flow beneficially.

Examples from the Plan include: The West Stanislaus Flood Control Project studies the use of multi-purpose detention basins to reduce flood damage in Newman, Patterson and surrounding agricultural lands. The Arroyo Pasajero Flood Control Project considers a mix of existing features modification and construction of new facilities to better control periodically inundating flows that jeopardize the SLC, Interstate 5, and thousands of acres of highly productive farmland.

C.1.6 Groundwater Management

Objective #5: Maximize utility of Regional aquifers while reducing potential for overdraft.

Examples from the Plan include: The San Joaquin River – DMC Pipeline Connection provides operational flexibility that could alleviate reliance on groundwater. The Pleasant Valley Groundwater Banking project maximizes potential of a confined aquifer. The Westside Regional Drainage Plan strategically extracts groundwater in order to minimize the hydraulic pressure affecting tile drains.

C.1.7 Recreation

Objective #6: Consider recreational potential in project development.

Examples from the Plan include: The Level 2 & Level 4 Refuge Water Supply Diversification Program provides water critical for wildlife habitat cultivation, which can be enjoyed by naturalists, bird watchers, and hunters alike. The West Stanislaus Flood Control Project contemplates a recreational benefit through the development of multi-purpose detention basins.

C.1.8 Storm Water Management

Objective #7: Capture storm water for higher beneficial use whenever practicable.

Examples from the Plan include: The Westside Regional Drainage Plan could diminish the discharge of storm flow by directing it through its reuse areas. The San Joaquin River – DMC Pipeline Connection could capture excessive San Joaquin River flows whenever feasible. The Pleasant Valley Groundwater Banking project could provide important storage of captured storm flow for use at more advantageous times.

C.1.9 Water Conservation

Objective #8: Always promote and enhance water conservation.

Examples from the Plan include: The Southwest Stanislaus County Regional Drainage Management intends on conserving water by developing a system to recover operational spills and tail water. In addition to reuse and recirculation, the Westside Regional Drainage Plan implements source control projects that will replace furrow irrigation with micro-irrigation technology and line earthen delivery canals. The West Stanislaus Flood Control Project will explore the potential of storing uncontrollable storm flow for later beneficial use.

C.1.10 Water Quality Improvement

Objective #9: Develop Regional solutions that provide opportunity for water quality improvement.

Examples from the Plan include: The Westside Regional Drainage Plan eliminates the discharge of agricultural drainage from the solution area thereby providing ecosystem and water quality benefits in the San Joaquin River and Delta. The Southwest Stanislaus County Regional Drainage Management project could capture for reuse approximately 20,000 AF of agricultural drainage annually. The San Joaquin River – DMC Pipeline Connection could improve Regional water quality by introducing high quality Central Sierra Nevada water into the system.

C.1.11 Water Recycling

Objective #10: Always promote and enhance water recycling.

Examples from the Plan include: The Southwest Stanislaus County Regional Drainage Management project's desilting and tail water recovery reservoir allows water to be recycled back through the system. The Westside Regional Drainage Plan incorporates water treatment strategies to develop high quality water that can once again be applied to primary irrigation lands.

C.1.12 Wetlands Enhancement

Objective #11: When possible, align projects to complement existing wetlands.

Examples from the Plan include: The Westside Surface Storage Reservoir project is located near the Mendota Wildlife Area and could provide habitat for migratory birds

C.1.13 Conclusion of Objectives Comparison

In all respects, the Westside Integrated Water Resources Plan corresponds well with the State's desired outcomes. In addition, the Plan complements federal goals and other water related objectives articulated in such documents as the CALFED Programmatic Record of Decision, CVPIA, California Water Security and Environmental Enhancement Act, and the Delta Improvements Package.

C.2.1 PLAN DEVELOPMENT

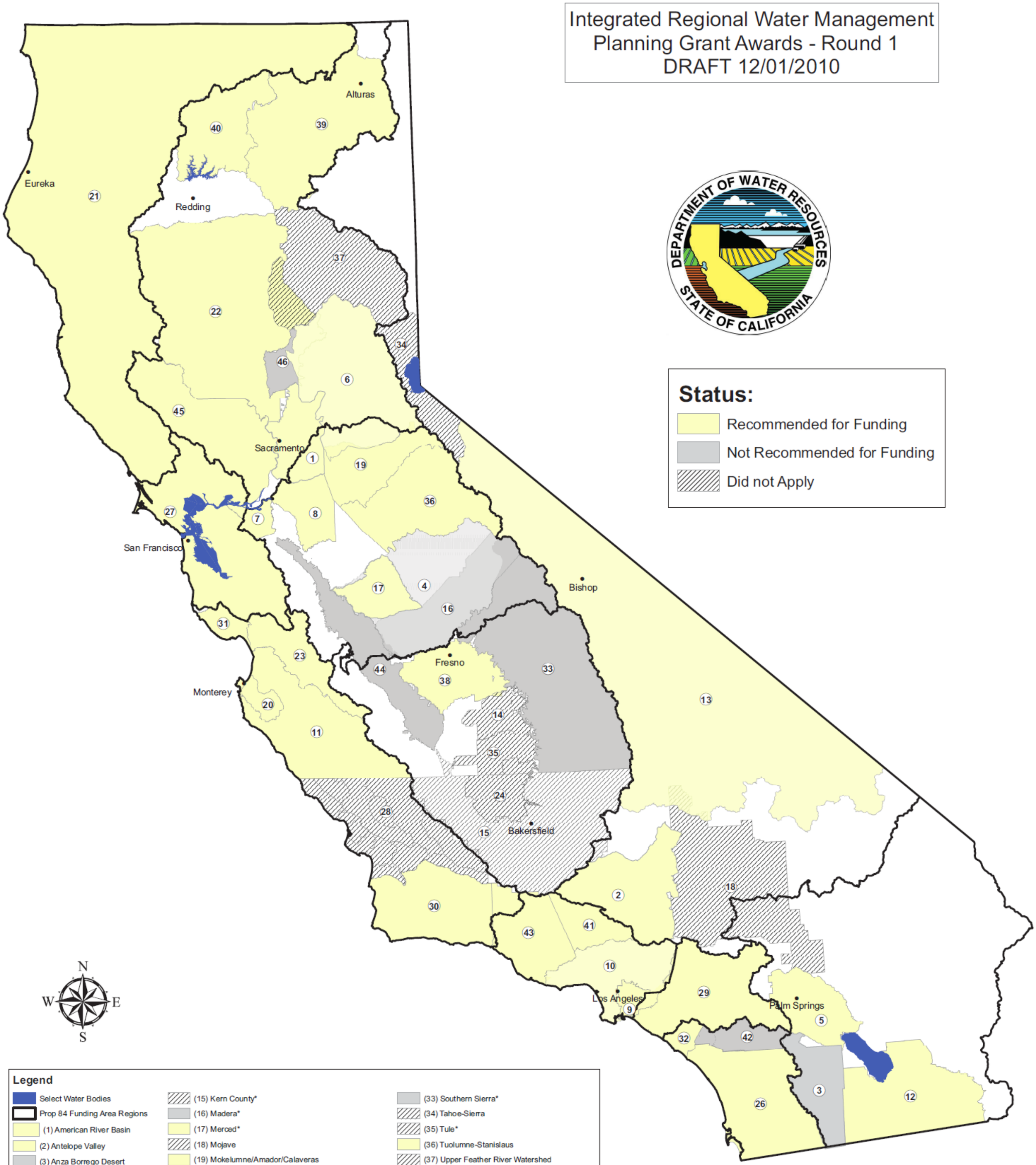
All of the projects incorporated in the Plan began locally and, through the open participation forums sponsored by the Water Authority and other organizations, local projects often evolve into Regional solutions. For example, the Westside Regional Drainage Plan was conceived by a group of individual landowners that began talking among themselves about their particular problems. As they began discussing potential solutions, local agencies' staffs were drawn in to the dialogue along with outside consultants. Ultimately the Water Authority was approached to facilitate the process and a definitive, comprehensive solution was developed. This approach to problem solving is typical within our Region.

Regional objectives have been developed in much the same way. Often, while Water Authority working groups or committees are considering a matter at hand, divisional

representatives share local experiences and ideas. In hearing local perspectives, other divisional representatives may begin contemplating how a project in San Joaquin County may alleviate a problem in Kings County; and so a solution is born. As a project evolves, the dialog passes from the informal committees to the formal Committees and ultimately the Board. If an action is adopted, then the discourse expands to other Regional and non-regional entities as appropriate. The inverse is also true, wherein the flow of ideas may emanate from outside the Water Authority through various conduits of communication, which may result in the adoption of projects or objectives of external genesis. In this fashion, Regional objectives are assessed frequently and iteratively, which fosters robust projects capable of adjusting as Regional priorities change. As a result, the Plan reflects a diverse knit of mutually beneficial solutions.

Indicative of the process, the Plan examines a broad array of issues, including water conservation potential, changes in land use, and measures to ameliorate drainage problems while improving ecosystem and drinking water quality affecting the lower San Joaquin River and Delta. The Plan illustrates the economic effect related to Regional utilization of the CVP water supply and generally contemplates the effect on local communities and the environment via implementation of water management options. The Plan also documents the potential use of water, existing supplies, which have significantly diminished over the last fifteen years, as well as existing and future water demands. Documenting potential water supply is a necessary step toward maximizing integration in that measuring the problems provides the greatest opportunity to develop comprehensive solutions.

Integrated Regional Water Management Planning Grant Awards - Round 1
DRAFT 12/01/2010



Legend

- Select Water Bodies
- Prop 84 Funding Area Regions
- (1) American River Basin
- (2) Antelope Valley
- (3) Anza Borrego Desert
- (4) Central California*
- (5) Coachella Valley
- (6) Cosumnes American Bear Yuba
- (7) East Contra Costa County
- (8) Eastern San Joaquin
- (9) Gateway Region
- (10) Greater Los Angeles County
- (11) Greater Monterey County
- (12) Imperial
- (13) Inyo-Mono
- (14) Kaweah River Basin*
- (15) Kern County*
- (16) Madera*
- (17) Merced*
- (18) Mojave
- (19) Mokelumne/Amador/Calaveras
- (20) Monterey Peninsula, Carmel Bay, So. Monterey Bay
- (21) North Coast
- (22) Northern Sac Valley - Four County Group*
- (23) Pajaro River Watershed
- (24) Poso Creek*
- (26) San Diego
- (27) San Francisco Bay Area
- (28) San Luis Obispo
- (29) Santa Ana Watershed Project Authority
- (30) Santa Barbara Countywide
- (31) Santa Cruz County
- (32) So. Orange County Watershed Management Area
- (33) Southern Sierra*
- (34) Tahoe-Sierra
- (35) Tule*
- (36) Tuolumne-Stanislaus
- (37) Upper Feather River Watershed
- (38) Upper Kings Basin Water Forum
- (39) Upper Pit River Watershed
- (40) Upper Sacramento-McCloud
- (41) Upper Santa Clara River
- (42) Upper Santa Margarita
- (43) Watersheds Coalition of Ventura County
- (44) Westside - San Joaquin
- (45) Westside (Yolo,Solano, Napa, Lake, Colusa)
- (46) Yuba County

* **Denotes Region Conditionally Approved**

Notes:
1) Numbers shown are for reference purposes only and correspond to internal DWR RAP submittal identifications.
2 Region boundaries shown are those submitted by each applicant as submitted to DWR for the 2009 RAP on April 29, 2009, or as revised and submitted to DWR following the 2009 RAP interview (as of November, 23, 2009).

Westside Integrated Water Resource Plan Update
Identification of Projects that Aid Disadvantaged Communities
DRAFT
March 30, 2010

Background

The Westside Integrated Water Resource Plan (WIWRP) is the San Luis Delta Mendota Water Authority's (SLDMWA) foundational document that provides a vision and structure for addressing the region's water resource related needs and is required for eligibility to receive Sate water resource related grant funding under Propositions 50 and 84. The current plan was adopted in 2005 and is being updated.

The WIWRP has undergone two levels of review by state agencies. During those reviews a number of weakness in the plan were identified that would need to be addressed to allow the SLDMWA to remain eligible for grant funding to implement projects identified in the plan. The primary criticisms of the reviewing agencies were a lack of sufficient engagement with regional disadvantaged communities and assessment of their water supply, water quality, flood control and wastewater disposal/recycling needs. Accordingly, the SLDMWA has undertaken an extensive effort to engage those communities in identifying potential projects during the WIWRP update process with the intention of including their input in the updated plan. The consulting team of Byron Buck and Associates, and Bill Jacoby Water Resources Consulting was retained to conduct the survey and WIWRP Update.

Executive Summary

The SLDMWA has completed an extensive survey among private and public community representatives to identify water supply, water quality, wastewater disposal/recycling, and flood control projects that will benefit disadvantaged communities in its WIWRP area.

The survey process included development of specific agency and contact person lists for water agencies and flood control organizations within the WIWRP. Additionally, a list of environmental justice organizations and contact persons was created. Those lists were used to contact each organization identified and seek their participation in identifying projects that will benefit disadvantaged communities. That process included formal letters, emails, and follow-up phone calls.

A total of eight organizations responded and identified twenty-two projects intended to benefit disadvantaged communities. Categories and approximate total project funding levels were as follows:

Category	Approximate Funding Needed
Flood Control	$61 million

Wastewater/Recycling Treatment	$25 million
Water Supply	$17 million
Water Quality	$13 million
Total Approximate Funding Need	$116 million

Specific project descriptions were prepared that include anticipated project benefits; current planning, design, and construction status; and projected costs and funding sources. Six of projects identified involved enhanced use of wells, four pertained to water storage and distribution, three to watershed management, two to wastewater treatment plant expansions, while a variety of other projects were identified as well.

The next steps will include:

- Updating the WIWRP governance structure to accommodate participation by the disadvantaged communities and environmental justice groups.
- Summarizing potential opportunities for funding of the projects identified in the survey
- Updating the WIWRP to include the disadvantaged communities and to meet the additional content requirements in the most recent DWR IRWM guidelines.

Survey Participant Identification

The SLDMWA developed a comprehensive plan to contact and solicit input from disadvantaged communities, flood control agencies, and environment justice groups within the WIWRP boundaries.

Community Water Agencies

Water agencies serving disadvantaged communities were anticipated to be one of the best sources of information about potential water and wastewater projects that would benefit those communities. During 2009 a list of potentially disadvantaged communities within the SLDMWA service area was developed. Identification of contacts for each of the water agencies serving those communities was developed using a variety of techniques. The approaches taken to gather contact information on the water agencies included: an internet search of the communities, calls and emails to potential contacts to verify information, assistance from those contacted in identifying staff at other water agencies, and knowledge of contacts from SLDMWA staff. As a result of that process, those water agency contacts were compiled and are included in Attachment I.

Flood Control Agencies

Flood control assistance for disadvantaged communities was also an area where local agencies were solicited for suggested potential projects. A list of agencies that could potentially provide such project recommendations was developed using many of the same techniques. Additionally, the State Department of Water Resources (DWR) Division of Flood Management provided a document titled, “Directory of Flood Officials” that was helpful in identifying potential survey participants. Again, SLDMWA staff was

able to provide advice on contacts as well. Attachment I also includes the flood control organizations and persons identified for contact.

Environmental Justice Organizations

At the same time, the water agencies and flood control agencies lists were being developed, a list of environment justice (EJ) groups to be contacted for participation in the update process was also developed. Participation of EJ organizations in the update process will be useful in reviewing and determining the needs of the disadvantaged communities located in the WIWRMP area. The development process included internet searches for potential participant organizations, calls to potential participant organizations to seek the names of other organizations that may be appropriate contacts, a request for assistance to DWR, and requests for assistance in locating contacts from other state-wide EJ advocates. Attachment I contains the EJ organizations and persons contacted to solicit participation in the update process. None of the EJ groups contacted have responded to the request.

Implementation of the Survey

Attempts to reach and urge participation by all potential survey participants and EJ groups were undertaken in three ways: by formal letter, email, and follow-up phone call.

Formal Letters

On December 31, 2009, formal letters requesting survey participation by water agencies and flood control agencies were mailed by the SLDMWA staff (see Attachments II and III for examples.)

The letters provided background information on development of the WIWRMP and detailed some of the success the SLDMWA has had in procuring state funding due to the WIWRP. It also explained that the intention of the survey was to identify water quality, water treatment, flood control, and water supply needs for disadvantaged communities in the area encompassed by the WIWRP. Specifically, the intention to help local communities improve their chances for state funding from existing and future water resource and water quality bond funding which is allocated in part through regional water plans was emphasized. The timeline for completing the update process was also provided. An explanation of the governance mechanism that will prioritize projects was mentioned as well. A consultant team contact email and phone number was provided to the organizations. Finally, a copy of the actual survey was attached to each letter.

The survey questionnaire itself summarized much of the background information contained in the cover letter as well as restating the consultant team contact information should the potential participant have any questions about the survey, or want to request assistance in responding. Participants were requested to provide the following information on each project submitted for inclusion in the WIWRP:

- Project Name
- Brief description of project, location, and census tract(s)served
- Type of benefit it will provide (i.e. enhanced water supply or treatment, improved water delivery, better wastewater treatment, or other)
- Measure of benefit provided (i.e. AF of water supply, AF of water treated, miles of delivery system improved, or million gallons a day (MGD) of wastewater treated.
- Project status % currently completed and completion date for:
    - Planning
    - Design
    - The need for and status of environmental documents
    - Construction
    - Project challenges/obstacles, if any
- Project costs (Planning/design and construction)
- Anticipated project funding sources
- Any other information they would like to share

Participants were requested to return the surveys by January 18, 2010.

Email Contacts

Between January 4, 2010 and January 6, 2010 emails were sent to each water agency and flood control agency contact where email addresses were available. The email reminded the potential participant of the letter they had recently received from the SLDMWA requesting participation in the WIWRP survey. For the convenience of the participant, an electronic version of the survey was attached to the email as a Word document. This would allow the participant to complete the survey and email it back to the consultant team. Finally, participants were again provided consultant team contact information should they have questions or need assistance in completing the survey.

Follow-up Contacts

For those agencies that had not submitted a survey by the end of January 2010, an attempt was made to reach the contact by phone.

Survey Results

General Observations

Those agencies that elected to participate in the survey tended to be able to provide most of the information requested. However, because some projects are still in the early planning stages, specifics about start and completion dates, as well as planning and construction cost were not included in some of the responses. Some agencies indicated that for various reasons it was not appropriate for them to participate in the survey at this time, therefore, they did not complete the survey. However, the eight agencies that did respond did identify twenty- two projects, with over $9.8 million in planning and

nearly $106.5 million in potential construction project costs. Table 1, “San Luis Delta Mendota Water Authority WIWRMP Update Projects – Basic Information” provides a summary of those projects and reasons stated for those agencies that elected not to participate. A total of over $61 million in total funding needs were identified for flood control projects, over $25 million in wastewater and water recycling projects, over $16.5 million for water supply projects, and $13 million of water quality projects.

Table 1
San Luis Delta Mendota Water Authority WIWRMP Update
Projects - Basic Information

Agency	Type of Project	Planning $	Construction $
Water Supply Projects			
Santa Nella CWD	Well Study/Project	500,000.00	1,000,000.00
City of Gustine	Well & system improvements	450,000.00	3,800,000.00
City of Los Banos	Well rehabilitation	125,000.00	1,000,000.00
City of Los Banos	Ground water monitoring	150,000.00	500,000.00
City of Los Banos	Production well # 16	120,000.00	850,000.00
City of Newman	New well # 9	450,000.00	1,500,000.00
City of Newman	Storage tank & pump station	450,000.00	1,500,000.00
City of Newman	Distribution system improve	46,250.00	154,000.00
City o San Joaquin	Water well # 6	100,000.00	650,000.00
City of San Joaquin	Water storage tank	100,000.00	600,000.00
City of San Joaquin	Main line replacement	10,000.00	680,000.00
City of San Joaquin	Citywide meter installation	150,000.00	1,350,000.00
Twin Oaks Irrig. Co.	Tailwater recovery system	-	150,000.00
Twin Oaks Irrig. Co.	Well replacements	-	200,000.00
	Total	2,651,250.00	13,934,000.00

Water Quality Projects

Santa Nella CWD	Water Treatment Plant Imp.	500,000.00	12,000,000.00
Twin Oaks Irrig. Co	Dredge Ramona Lake	0	500,000.00
	Total	500,000.00	12,500,000.00

Wastewater Disposal/Recycling Projects

City of Kerman	Treatment Plant Expansion	0	5,700,000.00
Santa Nella CWD	Treatment Plant Expansion	1,500,000.00	18,000,000.00
	Total	1,500,000.00	23,700,000.00

Flood Control Projects

City of San Joaquin	Strom drain lift station	150,000.00	1,350,000.00
Westside RCD	Arroyo Pasajero project	1,000,000.00	15,000,000.00
Westside RCD	Tranquillity/San Joaquin	3,000,000.00	25,000,000.00
Westside RCD	Panoche-Silver Creek project	1,000,000.00	15,000,000.00
	Total	5,150,000.00	56,350,000.00

Grand Total	**9,801,250.00**	**106,484,000.00**

Agencies not Participating

Name	**Reason stated**
City of Lemoore	Not disadvantaged community
Crows Landing	No projects planned
Westley CSD	No projects planned

Projects Specifics

This section provides a brief narrative of each of the twenty-two projects identified by the survey respondents. It must be recognized that the responses were prepared using the best available information at that point, and that information may change over time. The projects are presented in alphabetical order by agency and not in any way ranked or prioritized.

Water Supply Projects

City of Gustine – Water System Improvements Project

The project consist of replacing an existing well with construction of a new well, pumping facilities, 1 million gallon storage tank, and booster pump station. Additionally, it will include replacement of water lines and completion of a 12" water line looping the water system.

This project will ensure water pressure and enhance water supply reliability. It will provide an additional 1,200 AF of water supply and 1 million gallons of additional water storage.

Project planning is complete while design is to be completed in November 2010. No delays for environmental documents are anticipated and construction is planned for 2011 with no project challenges or obstacles identified at this point. Planning and design costs are project at $450,000, while construction costs are set at $3.8 million. Other funding sources include a USDA loan and grant.

City of Los Banos – Drinking Water Well # 15 Rehabilitation

The City of Los Banos provides drinking water to approximately 33,000 residents through approximately 12,000 water services. Los Banos had been a rapidly developing community prior to the current economic downturn. It is imperative that the City of Los Banos identify additional sources of drinking water through groundwater production wells as the current economic situation will not last. Recent groundwater test drillings have not proven fruitful and returning Well # 15 back to service will help while Los Banos continues to search for additional sources of potable drinking water.

City of Los Banos Drinking Water Well # 15 is located within the city limits of Los Banos adjacent to Badger Flat Road. The well is currently identified by the California Department of Health Services as in standby mode. The well was placed on standby approximately two years ago due to revisions in the State Arsenic maximum contaminant levels. The current Maximum Contaminant Level (MCL) is 10 parts per billion, which had been reduced from 50 parts per billion. Well #15 Arsenic levels fluctuate between 9 and 12 parts per billion consistently. The City of Los Banos would like to identify and implement an efficient, environmentally friendly and cost effective

method of lowering the Arsenic levels to consistently remain below the MCL so that the drinking water well can be returned to service.

The benefits of returning the drinking water well to service include increasing the drinking water and fire flow suppression volumes needed to continue to provide acceptable levels of service to the citizens of Los Banos. Additionally, the project would return to service a significant investment that had to be removed due to changes in water quality standards. The project will reintroduce a viable drinking water source as the City has had difficulty in identifying a replacement source. Another benefit of returning well # 15 to service will be an increase to a maximum potential of 4.8 Acre Feet in 24 hours pumping capacity for the City of Los Banos water system.

Project planning is underway. The Public Works Department has been investigating methods to return the well to service. However no type of method has been identified as the optimum method. It is believed consultant assistance is needed to find the optimum method. If funding becomes available the Public Works Department will work to accelerate the project to immediate status. Additionally, design has not been initiated and the need for and status of environmental documents are uncertain as this will be dependent on the type of method identified to return the well to service. Construction for method of treatment has not been initiated. Well # 15 is a fully functional drinking water production well approved by the State of California Department of Health Services. Project Challenges/ Obstacles are funding the project and identifying an efficient, environmentally friendly and cost effective method of lowering the Arsenic levels to consistently remain below the MCL so that the drinking water well can be returned to service. Projected costs are as follows: planning and design costs are anticipated at $125,000.00, while construction costs are anticipated to be $700,000 to $1,000,000.

This well has been identified in the City of Los Banos Water Master Plan as a Capital Improvement Project. If no alternative sources of funding are available, City Rate Payers will have to provide the funding source for returning the well to service. However there are currently not enough funds to implement this project in the near future. The identification of a funding source to accelerate the project would be desirable.

<u>City of Los Banos – Groundwater Monitoring Well Installation</u>

The project involves installing groundwater monitoring wells in locations that will be identified in the upcoming joint groundwater study currently underway between the City of Los Banos and the Central California Irrigation District (CCID.) It is anticipated that the monitoring wells will be installed Northwest and West of the City of Los Banos. The number of wells and exact locations will be identified in the joint ground water study. Installation of monitoring wells will provide valuable information such as groundwater levels, seasonal pumping elevations, water quality, etc. which can lead to more efficient groundwater management between the City of Los Banos and the Agricultural Community.

The measurement of benefit is uncertain. However the installation of groundwater monitoring wells will provide information that will allow the City of Los Banos and the Central California Irrigation District to implement “Best Management Practices” to assure consistent and responsible groundwater use though pumpage.

Planning is currently underway and the consultant was recently authorized to begin. Completion of planning is anticipated for May/June 2010. Design will be initiated once the planning phase is complete. It is anticipated design will begin in winter of 2010 with completion in spring 2011. A CEQA document may need to be generated for the monitoring well installation but it is uncertain at this time. Construction is anticipated to begin in summer 2011 and be complete by fall 2011. Approval of environmental requirements if required. Land easements to install the monitoring wells may be necessary. Funding to install the monitoring wells will be a challenge, projected costs include: planning and design $150,000 and construction $500,000.

City of Los Banos – Production Well #16

It is becoming more difficult to find viable groundwater sources in the Los Banos area. There appears to be many new agricultural wells being drilled yearly that compete with the City’s ability to provide quality ground water to its residents. At some point in the near future the City will have to embark on a project to investigate surface water supply options.

The project will install a drinking water production well in a location to be determined. The City of Los Banos Water Master Plan has identified areas on the Northwest and West side of Los Banos as a location for a drinking water wells. An additional water well will enhance the City’s water supply in order to meet current and future needs of the City of Los Banos.

The measure of benefit intended is to provide a water production well that will supply 4 – 6 AF per day maximum pumping capacity.

Project planning must begin in Early 2011 and there is 0% completed. Design is to beginning summer of 2011 and is 0% complete. It is anticipated that a CEQA document will be required and 0% is complete. Construction is tentatively scheduled to begin late 2011 to early 2012. Challenges are to find a test hole that will provide the quality and yield necessary to develop the well. Project costs include: planning / design are estimated at $120,000, while construction is estimated at $850,000. An anticipated project funding source, if available, is developer impact fees. If funds are not available the City will look towards any grant funding opportunities.

Anticipated funding sources are uncertain. The City of Los Banos and CCID may agree to jointly install the monitoring wells. The City’s funding sources would have to come from developer impact fees of which the City currently does not have sufficient funds. Available grant funding opportunities must be explored. It is a challenge to find viable

sources of potable groundwater to provide the residents of Los Banos. With the continuing installation of agricultural wells and the future increase in Los Banos population, the groundwater basin in the area must begin to be properly managed so that all entities can have their needs met.

City of Newman – New Well #9

The project would drill a new well to supply a minimum capacity of 1,700 gallons per minute (gpm.)

The project will enhance water supply and water quality for the community customers served. The increased volume of water supply will benefit the entire City. Specifically, fire protection and water quality benefits will be realized.

Project planning has not yet been initiated; however, project costs are projected as follows: planning/design at $450,000, with construction at $1million. This project is listed in the City's Capital Improvements Master Plan.

City of Newman – Storage Tank and Pump Station

This project would construct a new 1 million gallon storage tank and a 4,500 gmp booster pump station for water supply.

The project would enhance water supply, increase water pressure throughout the City, and provide backup water supply.

Project planning has not yet been initiated; however, project costs are projected as follows: planning and design at $450,000 and construction at $2 million. The project is listed in the City's Capital Improvements Master Plan.

City of Newman – Distribution System Improvements

This project would make improvements to the City's potable water delivery system. The project involves construction of approximately 1,100 feet of 14 inch diameter pipeline.

The primary benefit of the proposed distribution system improvements will be to ensure that there is adequate flow and water pressure available throughout the system.
Project planning has not yet been initiated; however, project cost are projected as follows: planning/design at $46,200 and construction at $154,000. This project is listed in the City's Capital Improvements Master Plan.

City of San Joaquin – Water Well #6

This project proposes to construct an additional domestic water well to provide the City the capacity to meet peak demand with its largest well out of service. Currently, the peak demand, including fire flow, is 3,500 gpm. The City's existing wells No. 3 and 4

can produce 1,200 gpm each, and Well No. 5 has a capacity of 1,100 gpm. The proposed well is expected to produce 1,200 gpm. The proposed location is on Railroad Avenue, south of Sutter Avenue, within the City of San Joaquin.
The primary benefit from this project will be enhanced water supply. It is projected that 80 AF of additional water supply will be available to the City annually through the project. Additionally, existing Well No. 4 has had ongoing service and maintenance issues and there is concern that if that well were to go out of operation, the City would experience serious water supply issues. In addition to satisfying peak demand conditions, the proposed Well No. 6 is also needed just to provide adequate capacity in the event that Well No. 4 must be taken offline. Project planning is 10% complete and design has not yet been implemented. Environmental clearance needed and that process not started yet. The expected environmental document is Negative Declaration. Construction has not started. The proposed well site needs to be acquired by City, and a hydrogeologic report will need to be prepared and demonstrate suitability of proposed site. Project cost are as follows: planning/design at $100,000 and construction at $650,000. Anticipated project funding sources are to be determined.

City of San Joaquin - Water Storage Tank

This project is proposed to address deficiencies in the City's ability to meet peak water demand during the summer months, by providing additional storage capabilities to supplement the capacity of the existing domestic wells and proposed Well No. 6. The tank would be constructed near the proposed Well No. 6 site, and would have a storage volume of 750,000 gallons. Construction would also include construction of 12" water main to connect existing facilities in Railroad and Colorado Avenues.

The primary benefits from the project are enhanced water supply and meeting peak demands. The tank will provide 750,000 gallons of storage for those purposes.

Project planning is 10% complete and design is not yet initiated. It is expected that environmental clearance will be needed and that process not started yet. It is expected that a Negative Declaration will be determined. Construction has not yet started. Project cost are as follows: planning/design at $100,000 and construction at $600,000. Anticipated project funding sources are to be determined.

City of San Joaquin – Water Main Replacement

This project proposes to replace existing undersized 4" water mains with 6" PVC pipelines. Also included is construction of a section of 8" water main in Pine Street near Utah, construction of a section of 12" water main in Manning Avenue near Utah to finish the system loop in that area, and construction of shutoff valves in various locations throughout the City.

The primary benefit from the project would be improved water delivery reliability. It is anticipated that 1.25 miles of delivery system would be improved through this project.

Project planning is 10% completed and design has not been initiated. It is anticipated that environmental clearance will be needed and that process not started yet. It is expected that a Negative Declaration will be used. Construction has not yet started. Project costs are as follows: planning and design at $100,000 and construction at $680,000. Project funding sources are to be determined.

City of San Joaquin – Citywide Water Meter Installation

The City of San Joaquin's water service program is currently set up on a predominately flat rate system with only a few existing water meters in the City. This project would install meters on all existing City service lines, establish an electronic meter reading network, and upgrade the City's utility billing software.

Benefits from the project will include improved water delivery and increased water conservation. It is anticipated that the project will result in an estimated 20% reduction in total water demand. A Water Conservation Plan has been prepared for the City of San Joaquin in order to determine methods to reduce water usage. The installation of water meters was recommended as an important strategy in the report.

Project planning is 20% complete and design has not been initiated. It is anticipated that environmental clearance will be needed and that process has not yet started. It is expected that a Negative Declaration will be used. Construction has not yet started. Project costs are as follows: planning and design at $150,000 and construction at $1,350,000. Project funding sources are to be determined.

Twin Oaks Irrigation Company – Tailwater Recovery System

Twin Oaks Irrigation Company services about 3,000 acres right along the San Joaquin River, and its tail water would normally run right back into the river. Through a series of ditches and holding ponds they are developing a recycling system that not only handles its own tailwater, but absorbs much of the water that runs off from Patterson Irrigation district. In the last three years they have put in two recycling pumps but still want to do two more to use all of the water.

Benefits from the project will include reusing runoff water to reduce water supply demand and potential negative environmental impacts.

Project planning is 50% complete and design is completed. Environmental requirements have not been determined. Construction of the second two pumps has not yet started. Project construction costs are anticipated to be $150,000. Project funding sources are yet to be determined.

Twin Oaks Irrigation Company – Shallow Well Replacements

This project would replace two shallow wells with high salt content.

Benefits would include less salinity in the water produced and reduce salinity of any runoff.

No planning or design has been initiated for the project. Construction costs are estimated at $200,000. While this project is in the Ten Year Capital Improvement Plan, no specific funding sources have been identified.

Water Quality Projects

Santa Nella County Water District – Water Treatment Plant Improvement

The project would upgrade the existing water treatment plant to bring it up to drinking water regulatory requirements.

Benefits will include improved treated water for compliance with CDPH and to better serve the community.

Project planning is 25% completed. A mitigated negative declaration and EIR for the Community Specific Plan has been adopted. Project costs are as follows: planning and design $500,000 and construction $12 million. Project funding sources include a potential California Department of Public Health grant for planning and then ultimately construction funding.

Twin Oaks Irrigation Company – Dredge Ramona Lake

The Ramona Lake is a perfect site for a regional water restoration effort cleaning the water before it re- enters the river. After dredging the lake, the project would set up a natural water filtration system to clean the water before it re-enters the river.

Benefits would include sediment filtering and environmental benefits.

Project planning, design, and construction is yet to be initiated. Construction cost is estimated at $500,000. Project funding sources have not yet been determined.

Wastewater Disposal/Recycling

City of Kerman – Wastewater Treatment Plant Expansion

This project would augment the current wastewater treatment plant that is now operating at capacity. The expansion will give the City the capacity to operate until the year 2025 at its current growth rate.

Benefits from the project would include higher quality wastewater treatment and averting treatment capacity constraints. It is anticipated that 1.2 MGD of wastewater will be treated through this expansion.

Project planning and design have recently been initiated. Construction costs are estimated to be $5.7 million. Project funding sources include a State Revolving Fund (SRF) loan and ARRA funds.

Santa Nella County Water District – Wastewater Treatment Plant Expansion

This project will involve two phases of expansion. First, an additional treatment pond at the existing wastewater treatment plan will be constructed. The second phase will provide additional pond treatment and storage capacity, and construct a wastewater conveyance system to utilize the new wastewater treatment plant site for future development. Additionally, new headworks and storage ponds will be developed east of Interstate 5.

Benefits from the project will include improved wastewater treatment quality and increased capacity for existing customers and for future development. The project will bring the current treatment load into compliance with the current permit allowance and will increase the capacity for future development.

Project planning is 95% completed. Design and construction has not yet been initiated. Project costs are as follows: planning and design $1.5 million, construction $18 million. Potential project funding sources include: sewer connection fees, and funding from the SRF an SCWG – applications for funding are in progress.

Flood Control Projects

City of San Joaquin - California Avenue Storm Drain Lift Station

This project is proposed to construct a storm drain lift station and outfall relief line to address capacity issues with the California Avenue Storm Drain basin, which is undersized. During heavy storms, flows which exceed the basin capacity can be pumped into the adjacent James Irrigation District Ditch and discharged downstream. The basin is located at California Avenue and 6th Street.

Flood control benefits will be provided through this project. It is anticipated that 1,200 gpm discharge capacity will alleviate flooding of neighboring properties

Planning on this project is 50% completed. Design and construction have not been initiated. Environmental clearance is needed, but that process has not been started.

Projects costs are as follows: planning and design $50,000, and Construction $400,000. A pre-application has been submitted for federal funding through USDA Rural Development, Water and Waste Disposal Loans and Grant program. However, no award has been made at this point.

Westside RCD – Arroyo Pasajero

This project will serve the Upper Los Gatos, Warthan, Jacalitos and Zapato Chino watersheds. The plan is to continue the implementation of ranch and rangeland plans along with design of small watershed dams and diversion structures to hold back flood flows by retention and hence add additional flows to the Pleasant Valley Water District (PVWD) Groundwater Recharge Projects. The small retention dams will hold back high flow events and retain flows for a longer time at a higher quality (low flow = salt dissolution and seepage from marine-derived soils) so new diversion structures near and in Warthan and Los Gatos Creeks can percolate the water. The ranch and range plans also store additional water by expanding the riparian corridors such that the corridors re-establish sufficient vegetation to re-instate optimum amounts of water (decayed vegetation in and near the channel = “sponge-effect”) storage and percolation (Jacalitos – Kreyenhagen model). The program will assist in dissipation of energy in large AP events, restore riparian corridor habitat and reduce or meter flood flows that reach any of the downstream projects including the Pleasant Valley facilities, the AP Fan groundwater recharge project, the Westside Detention Basin or the Eastside Storage Basin described in the initial Westside IRP.

Benefits from the project will include: flood control, increased water quality, groundwater recharge, environmental enhancement, and increased water supply. It is anticipated that results similar to the Kreyenhagen Ranch in the Jacalitos watershed projects will be realized. Riparian function has been restored allowing for natural springs to recover from spring-time flow only to almost year-round flow.

Planning is currently 20% completed (10 ranch plans are completed, an unknown amount of flood water has been retained, there are inadequate funds to complete remaining ranch plans, and inadequate monitoring to determine amount of water retained in successful riparian corridor plans. Additional work is needed to complete CEQA on ranch plan implementation.) Environmental documents are needed, but have not been completed. Project costs are as follows: planning and design $1 million, construction $2 - $15 million. Anticipated project funding sources include Propositions 50 and 84.

Westside RCD – Tranquillity/San Joaquin (Panoche-Silver Creek Watershed Management)

This project will restore watershed functions by riparian corridor fencing, invasive species removal, through ranch and rangeland plan implementation. The unique aspect of this watershed system is every gallon of water that remains in the watershed retains specific levels of selenium thereby reducing the burden on the downstream agricultural soils and drainage. The upper watershed work would also lessen the impact on the disadvantaged community Mendota. The lower watershed project that maximizes protection of Mendota is a propose detention reservoir on public-agency owned lands south of Mendota. Westlands Water District has a preliminary design for such a facility however, the issue of selenium accumulation will need to be addressed by unique design elements that have to be developed by establishing test facilities. The proposed technique mirrors the experiments by UC Riverside that involve creating an anaerobic environment in a pre-treatment storage system so that selenium has an opportunity to go into the atmosphere as a gas. The combined projects of upper watershed management in accordance with a plan developed for WRCD by Tetra Tech/MFG and the delivery system and lower detention reservoir should eliminate the flood hazard to Mendota and minimize the potential accumulation of selenium in the agricultural soils of the lower Panoche alluvial fan. This project would also be complementary to the Panoche Water District element of the Westside Drainage Plan.

Benefits from the project include: reduced flooding, watershed enrichment, environmental enhancement.

Planning is currently 10% complete and design is anticipated to be complete in 2 years. Project costs are as follows: planning and design $1 million, construction $15 million. Anticipated project funding sources include Propositions 50 and 84.

Westside RCD – Tranquillity/San Joaquin Flood Protection and Water Conservation Plan

Because of loss of flood channel capacity (subsidence, levee conditions, siltation) Kings River flood flows threaten the disadvantaged communities of San Joaquin and Tranquillity. In 2006, a levee failed near Tranquillity and threatened the community with inundation. State Office of Emergency response mitigated the immediate threat. The project involves diverting 300 Cubic Feet Per Second (cfs) from the Kings River flood flows into the San Luis Drain at an intertie at the beginning of the Drain. The current Army Corps release down the James By-Pass flood system is 4,750 cfs, however the flood in 2006 approached 4,900 cfs at the James weir expecting that the channel losses would mitigate the flow to 4,750 into the Mendota Pool. The flow overtopped and undercut the levee. The project involves diverting the 300 cfs into the drain then constructing outlets to flood storage areas on public-owned land near the drain between Manning Avenue and the Mendota Wildlife Refuge. The stored water could either be released back into the Drain, or spill into the Pool after the flood event, or could be

pumped into local or regional laterals (6 and 7) for use by Westlands Water District. The project also involves using a consolidated RCD (Westside and Tranquillity) as an institutional framework to cover additional improvements to the Mendota Pool Fresno Slough arm since there is no public agency overlying that area at this time. The project therefore involves not only use of the Drain for flood management and water supply purposes but improved flood management capability by levee restoration and silt removal from Mendota Pool. The restoration of function of the Pool is critical for water supply for all the irrigation entities using the Pool and the Mendota Wildlife Refuge.

Project benefits include: flood management, water supply, environmental enhancement and other benefits. Potential water supply benefit of approximately 30,000 AF (600 AF/day x 50 days average excess flows from the Kings) could be realized.

Project planning, design, construction, and environmental documents have not been initiated. Project costs are as follows: planning and design $3 million, construction $25 million. Anticipated project funding sources include Propositions 50 and 84.

Next Steps

With the completion of the disadvantaged communities survey and analysis, it is appropriate to consider the next steps in incorporating the information into the WIWRP. It is recommended that following actions be taken by the consultant team:

1. A recommendation for updating the WIWRP governance structure to accommodate participation by the disadvantaged communities should be developed.
2. Prospective opportunities for funding of the projects identified in the survey should be considered. Specifically, grant funding opportunities in the current draft DWR Proposal Solicitation Packages should be pursued.
3. A plan for including the survey data, and additional requirements in the latest DWR IRWM guidelines, into the updated WIWRP should be finalized and implemented.

Attachments

Attachment I

WIWRP Community Leaders

December 2009
Water Agency Contacts

Agency	Contact
City of Avenal 919 Skyline Blvd. Avenal, CA 93204	Jerry Watson
City of Coalinga 155 West Durain Coalinga, CA 93210	Bill Skinner
Crows Landing P.O. Box 537 Crows Landing, CA 95313	Coleen Sanguinetti
City of Dos Palos 2174 Blossom Street Dos Palos, CA 93620	Darrell Fonseca
South Dos Palos Water 9095 N Street South Dos Palos, CA 93665	Margaret Branstentter
South Dos Palos Midway Com. Service Dist 21476 S. Reynolds Av. South Dos Palos, CA 93665	Annie Murchison.
City of Firebaugh 1443 11th Street Firebaugh, CA 93622	Ben Gallegos
City of Gustine P.O. Box 16 Gustine, CA 95322	Ernie Garza

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Gerry Forde

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Gustine, CA 95322

Amy Montgomery

City of Tracy
Public Works
333 Civic Center Plaza

Kevin Tobeck

Tracy, CA 95376

Twin Oaks
2012 Apple Av.
Patterson, CA 95363

Doug Dalton

Westley CSD
P.O. Box 26
Crows Landing, CA 95313

Coleen Sanguinette

Flood Control Agency Contacts

Agency	Contact
Reclamation District 1602 2012 Apple Avenue Patterson, CA 95363	Doug Dalton Manager
Reclamation District 2062 100 Ruble Road Crows Landing, CA 95313	Albert Mendes Jr. Vice President
Reclamation District 2091 2790 West Fulkerth Road Crows Landing, CA 95313	Dan Lamb Secretary
San Benito County Water District 30 Mansfield Road Hollister, CA 95024	Byron Turner Planner
Santa Clara Valley Water District 5750 Almaden Expressway San Jose, CA 95118-3686	Catherine Oven Watershed Manager

Environment Justice Organizations

Community Water Center
311 W Murray Av
Visalia, CA 93291

Susana De Anda

Environment Justice Coalition

Debbie Davis

654 13th Street
Oakland, CA 94612

Green Action

Bradley Angel

130 E. 8th St
Hanford, CA 93230

Attachment II
Water Agency Cover Letter and Survey

Name and Address of Municipal Water Agency Leader)

RE: Participation by Your Agency in the SLDMWA WIWRMP Revision Process

Dear _____:

The San Luis & Delta-Mendota Water Authority (Authority) is in the process of amending its Westside Integrated Water Resources Plan (WIWRP.) Under one of the projects within the WIWRP the Authority has been able to secure over $27 million in state grants to reduce agricultural drainage to the San Joaquin River, toward a zero-discharge goal for subsurface drainage by about 2012. The Authority would like to expand the objectives of this plan to encompass water quality, water treatment, flood control, and water supply needs for disadvantaged communities on the west side of the San Joaquin Valley, within the sphere of the Authority. As part of that process we are soliciting participation by water agencies in our service area in identifying potential projects for inclusion in the revised WIWRP**. The intention is to help local communities (like yours) improve their chances for state funding from existing and future water resource and water quality bond funding which is allocated in part through regional water plans such as the WIWRP.**

Through the remainder of the this year and into 2010 we will be revising the WIWRP and surveying communities to better understand their needs which could potentially be met through state grant funding that requires connection to an integrated water resource management plan (like the WIWRP.) We also anticipate that this process will develop a specific governance mechanism that will prioritize projects that support municipal services needs that are identified in the planning process. This governance would likely be different than the project selection process used to develop priorities for agricultural water supply and drainage management projects as the funding sources are often categorically separate. In other words, municipal service project priorities would not likely compete with agricultural management project priorities.

We are requesting your agency complete the attached survey for that purpose. For your convenience, an electronic version of the survey will also be emailed to you by, Bill Jacoby, our consultant on this project. For additional information on the project and survey, please contact Bill at (858) 693-3197 or billjjacoby@aol.com.

We request that you complete and return the survey by **January 18, 2010.**

Thank you for your assistance in this matter.

Sincerely,

Daniel. G Nelson
Executive Director

Attachment

(Survey)
Westside Integrated Water Resource Plan Update
Opportunities to Include Water Agency Projects

The San Luis Delta Mendota Water Authority (SLDMWA) is in the process of updating its Westside integrated Water Resource Plan (WIWRP.) As part of the update SLDMWA is engaging with all communities in the region to assess their water supply, water quality, flood control, and wastewater disposal/recycling needs. In particular, the SLDMWA seeks to evaluate its ability to assist communities which are designated as disadvantaged under state criteria, which may allow for special funding assistance. A desired outcome is to provide for mutually beneficial resource management between SLDMWA members and regional communities. **Water agency projects that are included in the WIWRP could benefit by potentially qualifying for grants and loans for planning and construction that would not otherwise be available. An important part of that process is gathering information on community water projects that benefit the region's communities.**

The survey below has been developed for that purpose. Please complete the survey and return it to Bill Jacoby at billjjacoby@aol.com, Fax (858) 693-3197, or mail to 11312 McBurney Ridge Lane, San Diego, CA 92131. Please contact Bill at (619) 200-3731 should you have any questions.

Following the surveys the SLDMWA will incorporate the findings into the WIWRP revision process and developing means for ongoing engagement of local communities in developing priorities for community water resource related projects within the WIWRP. This is intended to help local communities improve their chances for state funding from existing and future water resource and water quality bond funding which is allocated in part through regional water plans such as the WIWRP.

Please provide the following requested information for each potential project that could enhance water supply, water quality, flood control or wastewater treatment or other:

Project 1

A. Name of Project:
B. Brief description of project, location, and census tract(s) served:

C. Type of benefit it will provide (i.e. enhanced water supply or treatment, improved water delivery, better wastewater treatment, or other):

D. Measure of benefit provided (i.e. AF of water supply, AF of water treated, miles of delivery system improved, or MGD of wastewater treated):

E. Project status % currently completed Completion Date

   a. Planning

   b. Design

   c. Need for and Status of Environmental documents

   d. Construction

   e. Project challenges/obstacles, if any

F. Project costs: Anticipated Amount

   a. Planning/design

   b. Construction

G. Anticipated project funding sources:

H. Any other information you would like to share:

A. **Project 2** Name of Project:
B. Brief description of project, location, and census tract(s) served:

C. Type of benefit it will provide (i.e. enhanced water supply or treatment, improved water delivery, better wastewater treatment, or other):

D. Measure of benefit provided (i.e. AF of water supply, AF of water treated, miles of delivery system improved, or MGD of wastewater treated):

E. Project status % currently completed Completion Date

a. Planning

b. Design

c. Need for and Status of Environmental documents

d. Construction

e. Project challenges/obstacles, if any

F. Project costs: Anticipated Amount

a. Planning/design

b. Construction

G. Anticipated project funding sources:

H. Any other information you would like to share:

Project 3

A. Name of Project:
B. Brief description of project, location, and census tract(s) served:

C. Type of benefit it will provide (i.e. enhanced water supply or treatment, improved water delivery, better wastewater treatment, or other):

D. Measure of benefit provided (i.e. AF of water supply, AF of water treated, miles of delivery system improved, or MGD of wastewater treated):

E. Project status % currently completed Completion Date

a. Planning

b. Design

c. Need for and Status of Environmental documents

d. Construction

e. Project challenges/obstacles, if any

F. Project costs: Anticipated Amount

a. Planning/design

b. Construction

G. Anticipated project funding sources:

H. Any other information you would like to share:

Please provide information on any additional projects below:

Attachment III
Flood Control Agency Cover Letter and Survey

Name of Survey Respondent:
Contact Phone Number:
Email Address:

Thank you for participating in this survey.
Flood Control Agency Leader

RE: Participation by Your Agency in the SLDMWA WIWRMP Revision Process

Dear _____:

The San Luis & Delta-Mendota Water Authority (Authority) is in the process of amending its Westside Integrated Water Resources Plan (WIWRP.) Trough the WIWRP the Authority has been able to secure over $27 million in state grants to reduce agricultural drainage to the San Joaquin River, toward a zero-discharge goal for subsurface drainage by about 2012. The Authority would like to expand the objective of this plan to encompass water quality, water treatment, flood control, and water supply needs for disadvantaged communities on the west side of the San Joaquin Valley, within the sphere of the Authority. As part of that process we are soliciting participation by flood control agencies in our service area in identifying potential projects for inclusion in the revised WIWRP**. The intention is to help local communities (like yours) improve their chances for state funding from existing and future water resource and water quality bond funding which is allocated in part through regional water plans such as the WIWRP.**

Through the remainder of the this year and into 2010 we will be revising the WIWRP and surveying communities to better understand their needs which could potentially be met through state grant funding that requires connection to an integrated water resource management plan (like the WIWRP.) We also anticipate that this process will develop a specific governance mechanism that will prioritize projects that support municipal services needs that are identified in the planning process. This governance would likely be different than the project selection process used to develop priorities for agricultural water supply and drainage management projects as the funding sources are often categorically separate. In other words, flood control project priorities would not likely compete with agricultural management project priorities.

We are requesting your agency complete the attached survey for that purpose. An electronic version of the survey is available by contacting Bill Jacoby, our consultant on this project. For additional information on the project and survey, please contact Bill at (858) 693-3197 or billjjacoby@aol.com.

We request that you complete and return the survey by **January 18, 2009.**

Thank you for your assistance in this matter.

Sincerely,

Daniel. G Nelson
Executive Director

Attachment

(Survey)
Westside Integrated Water Resource Plan Update
Opportunities to Include Flood Control Projects

The San Luis Delta Mendota Water Authority (SLDMWA) is in the process of updating its Westside Integrated Water Resource Plan (WIWRP.) As part of the update SLDMWA is engaging with all communities in the region to assess their water supply, water quality, flood control, and wastewater disposal/recycling needs. In particular, the SLDMWA seeks to evaluate its ability to assist communities which are designated as disadvantaged under state criteria, which may allow for special funding assistance. A desired outcome is to provide for mutually beneficial resource management between SLDMWA members and regional communities. **Flood control projects included in the WIWRP could benefit by qualifying for grants and loans targeted for planning and construction that would not otherwise be available. An important part of that process is gathering information on flood control projects that provide reduced flooding, enhanced groundwater recharge, watershed enrichment, environmental enhancement, or other beneficial outcomes for the regions' communities.**

The survey below has been developed for that purpose. Please complete the survey and return it to Bill Jacoby at billjjacoby@aol.com, Fax (858) 693-3197, or mail to 11312 McBurney Ridge Lane, San Diego, CA 92131. Please contact Bill at (858)693-3197 should you have any questions.

Following the survey the SLDMWA will incorporate the findings into the WIWRP revision process and developing means for ongoing engagement of flood control agencies in developing priorities for flood control related projects within the WIWRP. This is

intended to help local communities improve their chances for state funding from existing and future water resource and water quality bond funding which is allocated in part through regional water plans such as the WIWRP.

Please provide the following requested information for each potential project:

Project 1

A. Name of Project:
B. Brief description of project, location, and census tract(s) served:

C. Type of benefit it will provide (i.e. reduced flooding, enhanced groundwater recharge, watershed enrichment, environmental enhancement or other beneficial outcome):

D. Measure of benefit provided (i.e. reduced flooding specifics, AF of groundwater recharged, or examples of watershed/environmental enhancement):

E. Project status % currently completed Completion Date

   a. Planning

   b. Design

   c. Need for and Status of Environmental documents

   d. Construction

   e. Project challenges/obstacles, if any

F. Project costs: Anticipated Amount

   a. Planning/design

   b. Construction

G. Anticipated project funding sources:

H. Any other information you would like to share:

Project 2

A. Name of Project:
B. Brief description of project, location, and census tract(s) served:

C.

Type of benefit it will provide (i.e. reduced flooding, enhanced groundwater recharge, watershed enrichment, environmental enhancement or other beneficial outcome):

D. Measure of benefit provided (i.e. reduced flooding specifics, AF of groundwater recharged, or examples of watershed/environmental enhancement):

E. Project status % currently completed Completion Date

   a. Planning

   b. Design

   c. Need for and Status of Environmental documents

   d. Construction

   e. Project challenges/obstacles, if any

F. Project costs: Anticipated Amount

   a. Planning/design

   b. Construction

G. Anticipated project funding sources:

H. Any other information you would like to share:

Project 3

A. Name of Project:
B. Brief description of project, location, and census tract(s) served:

C. Type of benefit it will provide (i.e. reduced flooding, enhanced groundwater recharge, watershed enrichment, environmental enhancement or other beneficial outcome):

D. Measure of benefit provided (i.e. reduced flooding specifics, AF of groundwater recharged, or examples of watershed/environmental enhancement):

E. Project status % currently completed Completion Date

   a. Planning

   b. Design

   c. Need for and Status of Environmental documents

   d. Construction

   e. Project challenges/obstacles, if any

F. Project costs: Anticipated Amount

   a. Planning/design

   b. Construction

G. Anticipated project funding sources:

H. Any other information you would like to share:

Please list any additional projects:

Name of Survey Respondent:
Contact Phone Number:
Email Address:

Thank you for participating in this survey.

Westside Integrated Water Resource Plan Update
Inclusion of Additional Projects

A. Project Name: Del Puerto Canyon Surface Storage Reservoir Project – Feasibility Study

B. Project Description/Location:

The Project

Del Puerto Water District ("DPWD"/"District")is in the initial phase of planning the construction of a surface storage reservoir project on Del Puerto Creek in the foothills of the coast range mountains west of the city of Patterson, CA. A Del Puerto Canyon Reservoir Project would provide additional off-stream storage south of the Sacramento-San Joaquin Delta along the west side of the San Joaquin Valley that will provide water supply and other benefits to the District and other water users in the Region.

The initial phase of the Project would be complete a feasibility assessment to determine if construction of such a reservoir could provide the anticipated benefits described below.

Potential Benefits

Local/Regional Water Supply Reliability Enhancement. In addition to helping to meet the water supply needs of the region's agricultural users who are suffering from ongoing water supply shortages associated with regulatory constraints, western Stanislaus County has experienced significant growth in all sectors, including residential, commercial and industrial uses. Water supplies necessary to support current planned growth are becoming a limiting factor. Development of the Reservoir could assist in meeting the area's current water needs without directly impacting local agricultural uses.

Flood Control. In addition to downstream flood control benefits, given the significant flows that Del Puerto Creek can generate, the Project could easily help protect the structural integrity of such essential structures as Interstate Highway 5, the California Aqueduct and the Delta-Mendota Canal.

Efficient Water Management. Both the Central Valley and State Projects are storage limited south of the Delta. Water that would otherwise be available for delivery, be it the prior year's conserved supplies or new year supplies, are sometimes adversely impacted due to storage limitations. The additional storage provided by a Del Puerto Canyon Reservoir could potentially increase surface water supplies south of the Delta and allow for more efficient use of existing supplies.

Power Generation. The Reservoir could be constructed as a pumped storage project utilizing seasonally available off-peak power for filling. Operationally, it would be filled roughly between the late fall and early spring and then drawn down while generating power from late spring through late summer or early fall, a high-demand period. Its location near the regional power grid would make it well suited for meeting peak power loads. The addition of a possible forebay would lend itself to daily peaking power generation using a renewable source.

Environmental Enhancement. Del Puerto Creek is an ephemeral stream that, when running, crosses the valley and enters the San Joaquin River. Riparian habitat features along the creek could be enhanced by capturing flood water to provide for more seasonally reliable flows in the upper portions of the Creek.

Recreation. Other than the San Joaquin River, there are no other surface water bodies between the Delta and San Luis Reservoir that provide opportunities for fishing, boating, camping and other forms of outdoor recreation.

D. List specific outcomes and deliverables that will result from the planning project:

Planning

Stage 1 – (Completed in Draft Form) Reconnaissance Level Study whose Project elements include: 1) dam location and potential sizing; 2) geologic and seismic considerations; 3) potential operational scenarios; and 4) potential project cooperators.

Stage 2 – Further Feasibility and Site Assessment elements will include: 1) preliminary review of environmental constraints; 2) review of land ownership and land values; 3) identification of existing infrastructure and sources of construction materials; and 4) preliminary feasibility assessment.

Stage 3 – Flood Control and Operational Assessment elements will include: 1) consultations on flood control and operations; 2) preparation of a conceptual operations plan; and 3) identification of suitable parties for operations and maintenance. The study would identify facilities needed to make the Project feasible so that preliminary design work can be initiated.

Stage 4 – Preliminary Cost Estimate with elements including cost estimates for 1) planning, permitting and design; 2) infrastructure construction; 3) existing infrastructure relocation/removal; 4) land acquisition; 5) operations and maintenance; and 5) power use/generation.

Stage 5 - Completion of a Feasibility Study that would qualify the Project for Federal and/or State funding authorization.

E. Project status – Percent currently completed and completion date- Phase 1 of a Stage 1 reconnaissance level study has been completed in draft form. Draft report is subject to District review and revision prior to finalization.

F. Anticipated planning project cost – Project cost estimates have not been fully prepared, however, initial estimates for completion of Stage 5 Feasibility Study adequate to qualify for Federal and/or State is estimated to be approximately $300,000.

G. Potential Project Cooperators, Areas of Interest and Funding Sources

Given the significant and growing need for new storage south of the Delta, there are many potential project cooperators. The operation of the project will depend almost entirely on cooperation and coordination with CVP and SWP operations. The nature of the relationship with the Bureau of Reclamation and the Department of Water Resources relative to the construction and operations will likely depend on the extent to which they are involved in the funding. At a minimum, operation agreements with both agencies will be required to provide certainty regarding the terms and conditions for moving CVP, SWP or other water into and out of the reservoir.

The number of cooperating partners and their areas of interest will depend on several factors including the nature and magnitude of the funding sources and the extent to which the project's operations can provide certain, reliable benefits. The regional planning requirements associated with funding by way of Proposition 84 and Proposition 1E are also important in deciding which entities would be most willing and able to participate.

Attached are:

1) Location Map

2) A preliminary estimate of the potential water storage capability

3) A table listing potential cooperating and funding partners and an indication of their potential areas of interest

4) A listing of tasks and their associated timeline

Figure 1: Del Puerto Canyon Reservoir Location Map

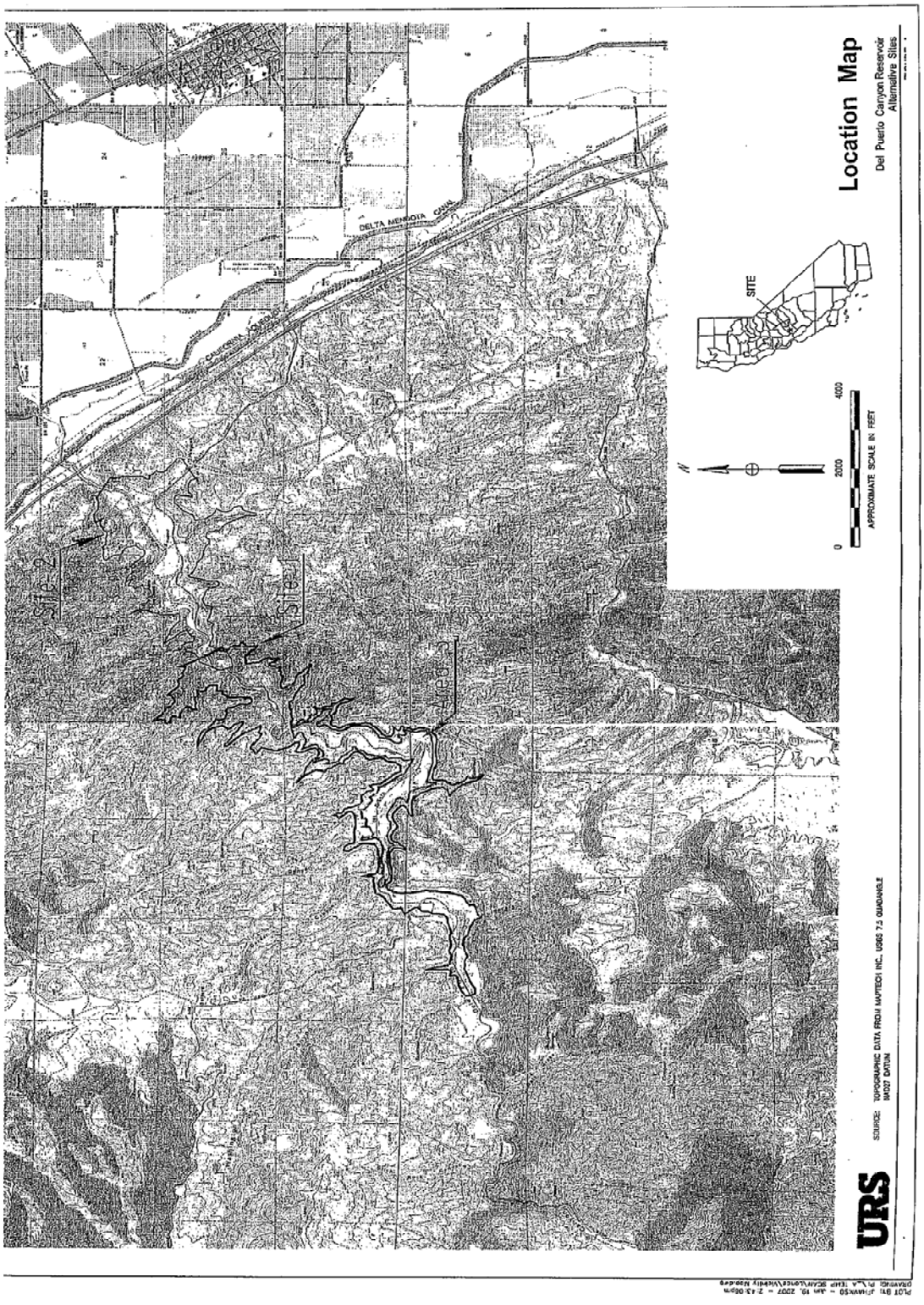


Exhibit 1 – Phase 1 Estimate of Water Storage Potential

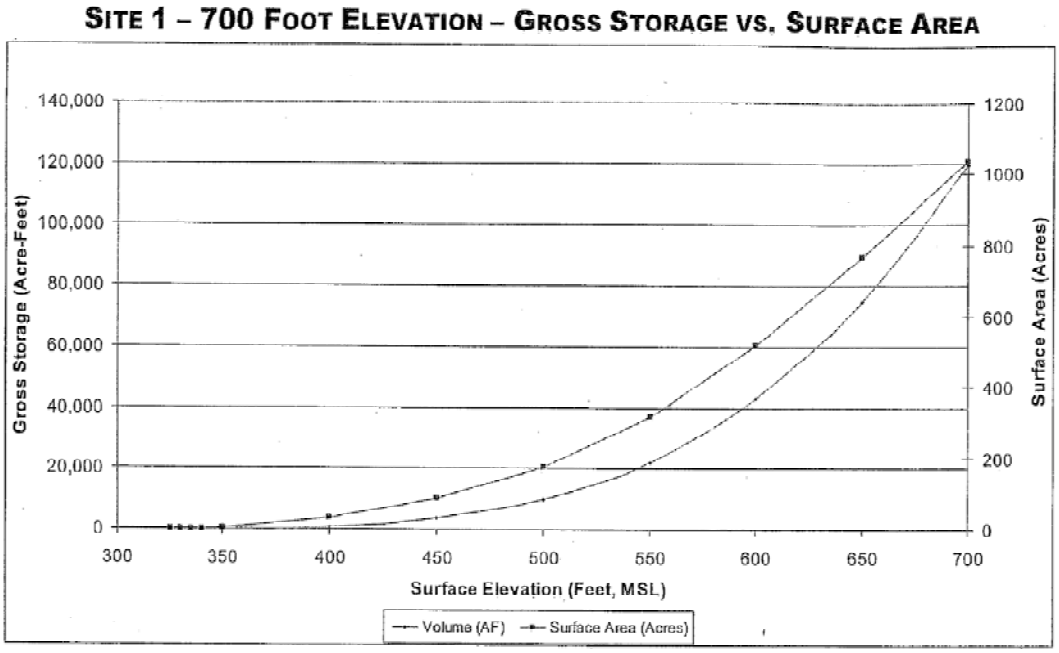
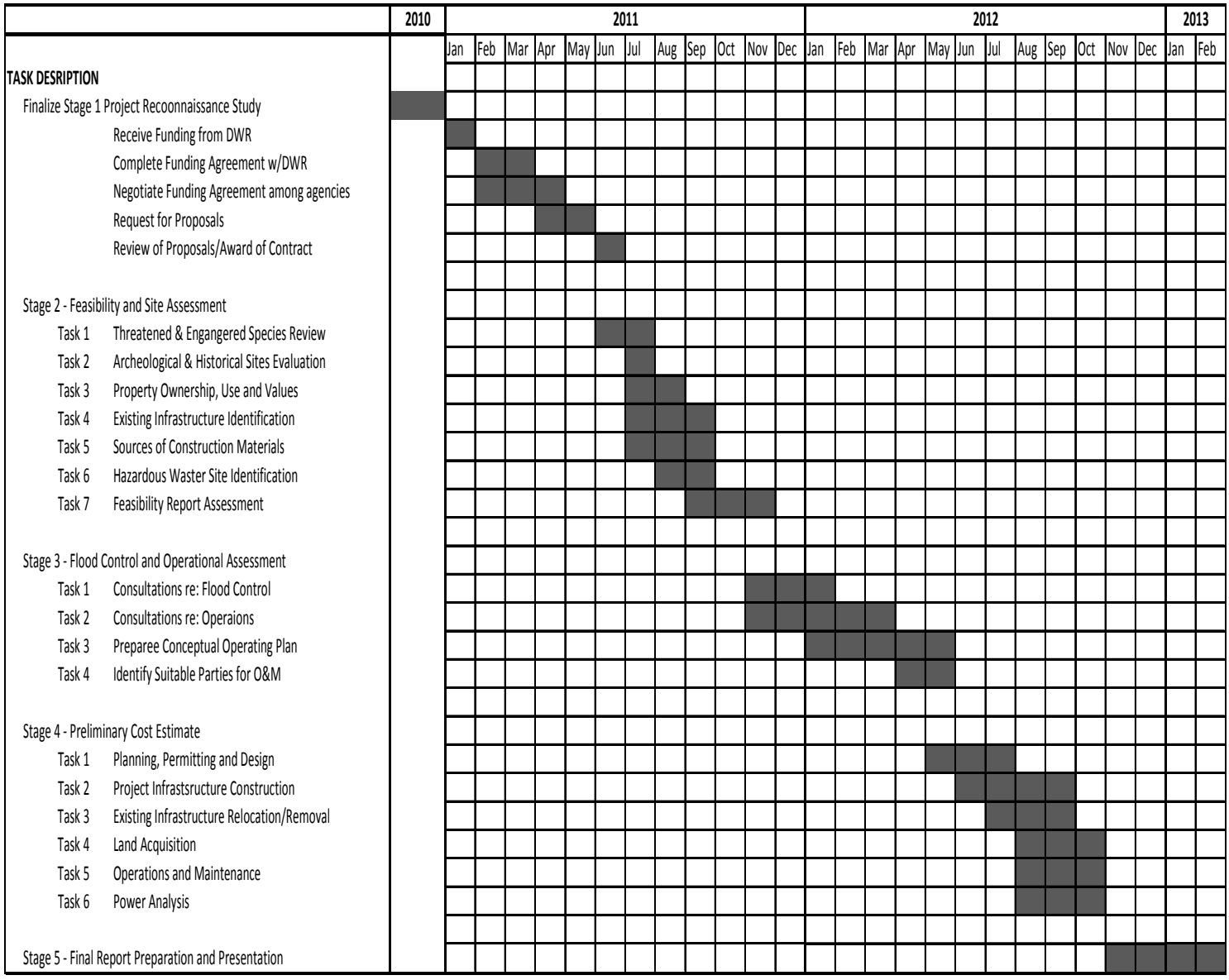


Table 1 - Potential Cooperating and Funding Partners

Potential Partners, Users & Interest	Water Supply		Seasonal Storage				Power	Flood	Environmental	
	New	Emergency	Spring	Summer	Fall	Winter	Generation	Control	Restoration	Recreation
Stanislaus County	X							X		X
City of Patterson	X							X		X
City of Tracy					X	X				
Santa Clara Valley WD		X	X							
San Benito CWD, urban	X		X							
Westlands WD			X			X				
Banta Carbona ID			X		X	X	X			
Patterson ID			X			X				
West Stanislaus ID			X	X	X		X			
San Luis WD	X	X	X	X	X	X				
Panoche ID			X			X				
Oak Flat WD			X							
Turlock ID							X			
Modesto ID							X			
CAL ISO							X			
DWR		X	X			X	X	X		
USBR, Operations		X	X					X		
USBR, SOD Refuges			X	X	X	X				
Corps of Engineer								X		
Friant CVP (NRDC Settlement)			X	X	X	X				
State Water Contractors, urban		X	X	X	X	X				
State Water Contractors, ag			X			X				
CA Dept of Parks & Recreation										X
CA DFG									X	
USFWS									X	
Great Valley Center/San Joaquin Valley Blueprint	X						X	X		X
Diablo Grande/Western Hills WD	X	X								X
Byron Bethany ID			X			X				
Power Companies							X			
Water Brokers			X	X	X	X				

Table 2 – Tasks and Preliminary Timeline Estimates



Del Puerto Canyon Reservoir
Project Reconnaissance and Phase I Feasibility Assessment
Scope of Work Outline

Prepared for and Submitted To
Mr. Bill Harrison, General Manager
Del Puerto Water District

Completed

Stage 1 – Project Reconnaissance Evaluation

This group of activities will focus on identifying potential fatal flaws and/or major issues that would preclude the development of Del Puerto Canyon Reservoir. These activities will be performed at the beginning of the process, and their results will be presented in a brief Project Reconnaissance Report. The tasks included in this Stage 1 are:

1. **Alternative Capacity Identification**
   - A) Determine net and gross storage capacities at alternative storage elevations,
   - B) Determine height of main dam and any required saddle dams for alternative storage capacities,
   - C) Identify inundation area for each alternative.

   Submittal: Storage elevation curve, inundations maps and description to be included in the Project Reconnaissance Report

2. **Preliminary Facilities Layout**

   Perform preliminary layout of major facilities and evaluation of site conditions. Includes estimate of design floods based on regional correlations and data from existing reports, in order to identify preliminary spillway dimensions.

   Submittal: Layout sketches and summary description to be included in the Project Reconnaissance Report

3. **Seismic Hazards Identification**

   Conduct literature search and review existing reports and data to evaluate seismic hazards in or near the reservoir site/area.

   Submittal: Summary description to be included in the Project Reconnaissance Report

4. **Dam Foundation Assessment**

   Conduct literature search, review existing reports and data, and visit site to assess Dam site foundation suitability (No Borings).

   Submittal: Summary description to be included in the Project Reconnaissance Report

5. **Review California Dam Safety Citing Guidelines**

   Review published literature, guidelines and other requirements as established by the State of California and/or federal agencies that may effect citing, design or operation of facilities.

   Submittal: Summary of findings to be included in the Project Reconnaissance Report

6. **Slope Stability Evaluation**

   Review published reports and conduct reconnaissance level field inspection to evaluate slope stability as it relates to potential limitations on reservoir operations particularly as it relates to rapid reservoir draw down rates.

   Submittal: Summary description to be included in the Project Reconnaissance Report

7. **Reservoir Sedimentation Evaluation**

   Perform a literature search and desk evaluation of potential basin erosion problems and their repercussion on reservoir sedimentation.

   Submittal: Summary description to be included in the Project Reconnaissance Report

8. **Operational Issues - Consultation with USBR, DWR and Others**

   Consult with Bureau of Reclamation, Department of Water Resources and/or other parties regarding alternative operations plans and issues

   Submittal: Summary of findings to be included in the Project Reconnaissance Report

9. **Prepare Conceptual Operational Plan**

   A) Develop conceptual operations plan including pumping rates during filling and return flow and reservoir draw down rates for alternative storage capacities,

   B) Identify electric loads and total power usage during pumping and generation during draw down for alternative storage capacities.

   Submittal: Summary of findings to be included in the Project Reconnaissance Report

10. **Identify Potential Project Cooperators and Funding Sources**

    A) Identify potential cooperators for later stages of the project study and initiate discussions with interested parties

    Submittal: Summary of findings

    B) Identify potential sources of local, state, federal and/or private funding to undertake later stages of the project.

    Submittal: Summary of findings, alternatives and recommendations

to P•

Stage 2 – Phase I Feasibility Assessment

Once the Project Reconnaissance Report resulting from Stage 1 is finalized, and its findings indicate that the selected project location and operation is feasible, other activities can proceed in order to reach an equivalent level of understanding, and potentially support carrying the project to the next phase. This Stage 2 will report its findings in a brief Phase I Feasibility Assessment Report, collecting and reporting the findings from the several activities performed.

I. Additional Site Assessment

1. **Threatened and Endangered Species and Wetlands**

   A) Inundation Area and Upstream: Review existing literature and publicly available databases to identify known listed species and species of concern and related designated critical habitat within the potentially impacted reservoir inundation area and upstream
   Submittal: Map(s), Table and brief report of findings

   B) Downstream Area: Review existing literature and publicly available data bases to identify known listed species and species of concern and related designated critical habitat in and along Del Puerto Creek from the reservoir dam site to the San Joaquin River.
   Submittal: Map(s), Table and brief report of findings

   C) Inundation and Downstream Areas: Review National Wetlands Data Base or other available sources to identify potential jurisdictional wetlands.
   Submittal: Map(s), Table and brief report of findings

2. **Archeological and Historical Site Evaluation**

   Review published reports and conduct reconnaissance level field inspection to evaluate presence of archeological and historical sites that would be impacted.
   Submittal: Map(s), Table and brief report of findings

3. **Property Ownership, Current and Potential Land Use and Values**

   For the inundation area and within 3 miles there of.
   a. Using public records determine property ownership.
   b. Inspect recent aerial photos and conduct field survey to determine existing property usage
   c. Review existing County General Plan and any specific Plan(s) to identify future potential land uses.
   d. Consult with realtors to preliminarily establish property value(s) under current and potential future land use.
   Submittal: Map(s), Tables and brief report of findings

4. **Existing Infrastructure Identification**

   Conduct field inspection to identify and characterize existing infrastructure features within the inundation and potential construction area that will require relocation or removal. Field survey to extend upstream if roads or other ingress/egress assets or features are present.

   Submittal: Map(s), Table and brief report of findings

5. **Source(s) of Construction Materials**

   Identify potential sources of construction materials

   Submittal: Map(s) and brief report of findings

II Flood Control Assessment

1. **Review and Assess Existing Reports**

   Review any available reports jointly with the activities of Part III Operational Alternatives, assess whether there are any potential flood control benefits given the constraints this would impose to filling the reservoir and to its operation for other beneficial uses.

III Operational Alternatives

Although these activities were performed during Stage 1, they have to be reconsidered and more fully evaluated to determine the potential flood control use identified in Part II.

1. **Consultation with USBR, DWR and Others**

   Consult with Bureau of Reclamation, Department of Water Resources, U.S. Army Corps of Engineers and/or other parties regarding alternative operations plans.

   Submittal: Table and Brief report of findings

2. **Prepare Detailed Conceptual Operational Plan**

   A) Develop detailed conceptual operations plan including pumping rates during filling and return flow and reservoir draw down rates for alternative storage capacities,

   Submittal: Brief report of findings

   B) Identify electric loads and total power usage during pumping and generation during draw down for alternative storage capacities.

   Submittal: Table and Brief report of findings

3. **Identify Operation & Maintenance Alternatives**

   A) Identify parties that are capable of and acceptable to the State of California to provide long term operations and maintenance.

IV Preliminary Cost Estimate(s)

Develop an estimate costs for studies, construction and other activities related to the development and operation of the Del Puerto Canyon Reservoir including:

1. **Phase II Detailed Feasibility Study**
2. **Planning, Permitting and Design**
3. **Infrastructure Construction.**

4. **Facility Relocation or Removal**
5. **Land Acquisition**
6. **Operations and Maintenance**
7. **Power, net income or cost**
8. **Other capital costs**

Submittal: Table and Summary Report of Phase I Feasibility Assessment

completed

CONFIDENTIAL

Del Puerto Canyon Reservoir
Phase I Feasibility Assessment
Cost Estimate

(1) Revised.

Stage No.	Task	Sub Task	Description	Estimated Hours: Principal in Charge	Project Manager	Project Prof.	Planner	GIS/CAD Specialist	Clerical	Sub Total	Expenses	Total Est. Cost
I			Project Reconnaissance Study									
	1		Alternative Capacity Identification									
		A	Determine Net & Gross Storage vs. Elevation		2	8		8		$ 2,296.00		$ 2,296.00
		B	Determine Height of Dam(s) vs. Storage		1	3				$ 521.00		$ 521.00
		C	Identify Inundation Area vs. Storage		1	4		4		$ 1,148.00		$ 1,148.00
			Prepare Map and Brief Report	1	3	2		2	1	$ 1,148.00		$ 1,148.00
	2		Preliminary Facilities Layout	2	10	4				$ 2,248.00		$ 2,248.00
		A	Brief report with sketchs	1	3	6		4		$ 1,852.00		$ 1,852.00
	3		Seismic Hazard Identification							$ -		$ -
		A	Literature and Data search and review	1	10	4				$ 2,078.00		$ 2,078.00
			Collect Maps and prepare Brief Report		3	4		2	1	$ 1,232.00		$ 1,232.00
	4		Dam Foundation Assessment									$ -
		A	Literature and Data search and review		12	3				$ 2,061.00	$ 500.00	$ 2,561.00
		B	Field inspection		4	4				$ 1,068.00	$ 120.00	$ 1,188.00
			Prepare Brief Report	1	2			1	2	$ 683.00		$ 683.00
	5		Review CA Dam Safety Citing Guidelines									
		A	Literature and Data search and review	1	3	5				$ 1,225.00		$ 1,225.00
			Prepare Brief Report		2	2			2	$ 642.00		$ 642.00
	6		Slope Stability Evaluation							$ -		$ -
		A	Review Published Reports and Data (NRCS and/or other)	1	10	2				$ 1,824.00		$ 1,824.00
		B	Field inspection	4	4	4				$ 1,748.00	$ 200.00	$ 1,948.00
			Prepare Map and Brief Report	1	2			2	2	$ 808.00		$ 808.00
	7		Reservoir Sedimentation Evaluation									$ -
		A	Literature and Data search and review		10	4				$ 1,908.00		$ 1,908.00
			Prepare Brief Report	1	4	2				$ 984.00	$ 200.00	$ 1,184.00
	8		Operational Issues Evaluation									
			Consultation with USBR, DWR, COE and Others		8	16				$ 3,152.00		$ 3,152.00
	9		Conceptual Operational Plan									
		A	Estimate pumping and drawdwon rates versus storage		2	8				$ 1,296.00		$ 1,296.00
		B	Estimate electric loads and generation versus storage		1	6				$ 902.00		$ 902.00
			Prepare Summary of Findings, Alternatives and Recommendations		4	2			1	$ 868.00		$ 868.00
	10		Identify Potential Project Cooperators and Funding Sources									
		A	Identify potential cooperators for later stages		4	4				$ 1,068.00		$ 1,068.00
		B	Review and Identify Grant Funding and/or Cost Sharing Sources		6	4				$ 1,348.00		$ 1,348.00
	11		Stage 1 Project Reconnisance Report									
			Preparation	2	6	16	4		12	$ 4,360.00		$ 4,360.00
			Presentation		6	2				$ 1,094.00		$ 1,094.00
			Travel							$ -	$ 240.00	$ 240.00
			Sub Total Stage 1 Reconnaissance Study							$ 39,562.00	$ 1,260.00	$ 40,822.00

Prepared by URS Corp., Central Valley Water Resources Division, Fresno, Oakland and Sacramento, CA June, 2006

Preliminary, Subject to Revision

Paid

CONFIDENTIAL

TO DO

Del Puerto Canyon Reservoir
Phase I Feasibility Assessment
Cost Estimate

Stage No.	Task	Sub Task	Description	Principal in Charge	Project Manager	Project Prof.	Planner	GIS Specialist	Clerical	Sub Total	Expenses	Total Est. Cost
			Estimated Hours									
2			**Phase I Feasibility and Site Assessment**									
	1		**Threatened & Endangered Species**									$ -
		A	Inundation area; Review published data/reports		3		2			$ 670.00		$ 670.00
		B	Downstream area: Review published data/reports		3		2			$ 670.00		$ 670.00
		C	Upstream area: Review published data/reports		3		2			$ 670.00		$ 670.00
		D	Identify potential jusridictional wetlands, Data Base Review		3		2			$ 670.00		$ 670.00
			Prepare Map and Brief Report	2	6		2	8	4	$ 2,646.00		$ 2,646.00
	2		**Archeological & Historic Sites Evaluation**									
			Scope area(s) of interest & submit		2			1		$ 405.00		$ 405.00
			Records Search from CSU Bakersfield		1					$ 500.00	$ 500.00	$ 1,000.00
			Field inspection, if necessary (optional)			6				$ 762.00	$ 120.00	$ 882.00
			Prepare Map and Brief Report		3	2		2	2	$ 1,032.00		$ 1,032.00
	3		**Property Ownership, Use and Values**								$ 200.00	$ 200.00
		A	Scope area(s) of interest & submit to Title Co.			2				$ 254.00		$ 254.00
			Title Co. Report						2	$ 108.00	$ 500.00	$ 608.00
		B	Existing land use aerial photo inspection			2		4		$ 754.00		$ 754.00
			Field verification			8				$ 1,016.00	$ 120.00	$ 1,136.00
			Prepare Map and Brief Report		1	4		2	2	$ 1,006.00		$ 1,006.00
		C	Future Land Use, General Plan Review				4			$ 500.00		$ 500.00
			Prepare Map and Brief Report		1	2	4	2	2	$ 1,252.00		$ 1,252.00
		D	Current and Future land values,-realtor consultation			6				$ 762.00	$ 200.00	$ 962.00
			Data base review of recent sales				3			$ 375.00		$ 375.00
	4		**Existing Infrastucture Indentification**									$ -
			Field Survey			4				$ 508.00	$ 120.00	$ 628.00
			Prepare Map and Brief Report		1	2		2	2	$ 752.00		$ 752.00
	5		**Sources of Construction Materials**									
			Literature and Data search and review	2	2	12	4			$ 2,644.00		$ 2,644.00
			Prepare Map and Brief Report		2	2		4	1	$ 1,088.00		$ 1,088.00
	6		**Hazardous Waste Site Identification**									
			Records Search of Known Sites		2	6				$ 1,042.00	$ 250.00	$ 1,292.00
			Prepare Map and Brief Report		1	2		2		$ 644.00		$ 644.00
	7		**Phase I Feasibility Assessment Report**									
			Preparation	4	6	8	6	6	12	$ 4,684.00		$ 4,684.00
			Presentation		6	6				$ 1,602.00		$ 1,602.00
			Travel								$ 120.00	$ 120.00
			Sub Total Stage 2							$ 28,028.00	$ 2,130.00	$ 30,158.00

Del Puerto Canyon Reservoir
Phase I Feasibility Assessment
Cost Estimate

Stage No.	Task	Sub Task	Description	Estimated Hours: Principal in Charge	Project Manager	Project Prof.	Planner	GIS Specialist	Clerical	Sub Total	Expenses	Total Est. Cost
3			**Flood Control and Operational Assessment**									
	1		**Consultation with COE, DWR and County Re: Flood Control**									
			Literature/Data search and review	4	2	4		2		$ 1,718.00		$ 1,718.00
	2		**Consultation with USBR, DWR, COE and SLDMWA Re: Operations**									
			Alternative Operating Plans		6					$ 840.00		$ 840.00
	3		**Prepare Conceptual Operating Plan**							$ -		$ -
		A	Pumping rate and return flow vs. storage analysis		3	4				$ 928.00		$ 928.00
		B	Determine Draw Down Rates, feet per day		2					$ 280.00		$ 280.00
		C	Electric load and generation vs. storage analysis		2	2				$ 534.00		$ 534.00
			Prepare Brief Report		5			2	1	$ 1,004.00		$ 1,004.00
	3		**Identify Suitable Parties for O&M**							$ -		$ -
			Prepare Brief Report		6				1	$ 894.00		$ 894.00
4			**Preliminary Cost Estimate (CAJ hours, all tasks)**		77					$ 10,780.00		$ 10,780.00
	1		**Planning Etc**									$ -
			Planning		4					$ 560.00		$ 560.00
			Permitting		4		6	2		$ 1,560.00		$ 1,560.00
			Design		4					$ 560.00		$ 560.00
	2		**Project Infrastructure Construction**									$ -
			Main Dam		4			4		$ 1,060.00		$ 1,060.00
			Saddle Dams		2			2		$ 530.00		$ 530.00
			Spillway and outlet		2			2		$ 530.00		$ 530.00
			Pumps, pipe and structures		4			2		$ 810.00		$ 810.00
			Electrical		4					$ 560.00		$ 560.00
			Access Road(s) and other		2			4		$ 780.00		$ 780.00
	3		**Existing Facilities/Infrastructure**									
			Relocation/modification		4			4		$ 1,060.00		$ 1,060.00
			Removal		4					$ 560.00		$ 560.00
	4		**Land Acquisition**		8			2		$ 1,370.00		$ 1,370.00
										$ -		$ -
	5		**Operation and Maintenance**	4	12	8				$ 3,376.00	$ 120.00	$ 3,496.00
										$ -		$ -
	6		**Power Analysis**							$ -		$ -
			Identify Sources and Costs of Power for Pumping	1	4	8				$ 1,746.00		$ 1,746.00
			Identify Buyers/Value of Power During Generation	1	2	6				$ 1,212.00		$ 1,212.00
			Perfom Cost/Benefit Analysis	1	2	4				$ 958.00		$ 958.00

Del Puerto Canyon Reservoir
Phase I Feasibility Assessment
Cost Estimate

Item No.	Sub Task	Description	Estimated Hours: Principal in Charge	Project Manager	Project Prof.	Planner	GIS Specialist	Clerical	Sub Total	Expenses	Total Est. Cost
5		**Miscellaneous Meetings and Travel**									
		Meetings - 4	6	32	8		8		$ 7,516.00		$ 7,516.00
		Travel 4X							$ -	$ 500.00	$ 500.00
6		**Final Report**							$ -		$ -
		Preparation	3	12	24		8	8	$ 6,670.00		$ 6,670.00
		Presentation	6	6					$ 1,860.00		$ 1,860.00
		Travel								$ 120.00	
		Grand Totals, All Phases	41	365	201	41	79	51	$ 110,241.00	$ 3,850.00	$ 114,091.00

	Principal in Charge	Project Manager	Project Prof.	Planner	GIS Specialist	Clerical	Expenses
Hourly Rate	$170.00	$140.00	$127.00	$125.00	$125.00	$ 54.00	

- Stage 1 costs needed to complete Phase I Feasibility Assessment

Del Puerto Canyon Reservoir
E-mail Log

Forwarded to Bill Harrison by Lance Johnson/Fresno/URSCorp

To: Steve Ottemoeller/Oakland/URSCorp
Subject : DRAFT DP Canyon, Purpose & Benefits Ideas

Steve;

I think we would agree that for any project the stated purpose and need can 1) greatly affect the likelihood of acceptability and success, 2) limit the avenues of opposition, 3) create or limit partnering opportunities and 4) open or close doors to potential funding and political support or opposition. In the best of all worlds a project will provide benefits in key areas to multiple local, state and federal agencies, interest groups and elected officials.

It is in that context that the statement of purpose, need and benefits that would be derived/generated by Del Puerto Canyon Reservoir (DPCR) will be vitally important. In that regard it strikes me that there are several hot button issues and key areas of interest that can be cited as benefits to be derived. Those "benefits" and their context are:

- **Efficient Water Management**

Recently there has been increasing discussion and focus by BoR, DWR, elected officials even environmental groups at regional, state and national levels on making better, more efficient use, of existing water supplies. As we know both the CVP and SWP is storage limited south of the delta (SOD) such that water otherwise available for delivery, be it prior year's carryover supply or new year supplies are lost. In short, developing the additional storage provided by DP Canyon could readily be termed Efficient Water Management or a Best Management Practice (BMP)

- **Drought Reserve Supplies**

As we know the CVP, if not the SWP as well, can experience a sequence of hydrologic year types through which one year will generate unused (lost) water, as above, while being faced with supply deficiencies the next. The usual context is a sequence of an Above Normal (AN) or Wet (W) years followed by a Dry (D) or Critically Dry (CD) year. But as we've also seen a Below Normal (BN) year type, pretty average, hydrology can generate foregone pumping and unused (lost) supplies going into a D or CD year facing an allocation of far less then 50%.

- **Catastrophic Supply Interruption Mitigation**

This issue/concern is increasingly coming to the forefront in many venues. Be it the result of a delta levee failure, an SOD facility failure (e.g. a CA aqueduct collapse or pumping plant outage), or a terrorist attack, availability of an "emergency reserve supply" in DPCR would be very important, and valuable.

There could be one caveat or concern with this "benefit". That is if DPCR were not allowed to be fully operated but rather only maintained full and used strictly for an emergency supply.

- **Power Generation**

DPCR would be a pumped storage project utilizing seasonally available off peak power for filling. Operationally DPCR would be filled roughly between the late fall and early spring and then drawn down (generating power) nominally from late spring through late summer or early fall. Power generation spanning approximately 5/1 - 6/1 through 9/1 or 10/1 would occur during a seasonally high demand period and its location is well placed within "the grid" to assist in meeting peak loads. Further, in theory DPCR releases and resulting generation could be coordinated on an hourly basis to better meet daily (diurnal) load patterns.

- **Local/Regional Water Supply**

Western Stanislaus County is experiencing significant growth and growth pressure in all sectors; residential, commercial and industrial. In the foreseeable future water supplies necessary to support continued growth will become a limiting factor. In short, development of DPCR

could/would assist in meeting the area's future water needs without directly impacting, if not in fact benefiting, local agriculture water users.

- **Flood Control**

As a "stand alone" project this is one of the most obvious, easily identifiable and quantifiable benefits of DPCR drawing some level of local, regional, state and federal support. Beyond that it may be possible, through integrated operations and "plumbing system" revisions, to assist in providing flood control benefits for Salado Creek and (possibly) Orestimba Creek thusly generating broader support for DPCR. Further, a subset benefit of DPCR flood control is that Del Puerto Creek can generate flows high enough to threaten the structural integrity of Interstate Highway 5 as well as the California Aqueduct and the Delta-Mendota Canal.
As such, construction of DPCR would reduce the potential of a catastrophic supply interruption within the CVP and SWP and disruption of interstate commerce traffic reliant on I-5.

- **Environmental Enhancement**

Del Puerto Creek is an ephemeral stream that meanders from the Coast Range Mountains across the valley and eventually reaches the San Joaquin River. Normally flows are of relatively short duration and only rarely reach the river. Habitat features along the creek are minimal. Flood water captured in and otherwise stored in DPCR could used to provide seasonally reliable flows in Del Puerto Creek to create areas/bands of riparian habitat and help create a migration corridor between the San Joaquin River and the coast range mountains.

- **Recreation**

Again fairly obvious but it is worth noting that, other then the San Joaquin River, there are no other surface water bodies in close proximity that provide opportunities for fishing, water skiing, lake-side camping etc. which would be attractive to the areas burgeoning population.

Lance W. Johnson
Project Water Resources Engineer
URS Corporation
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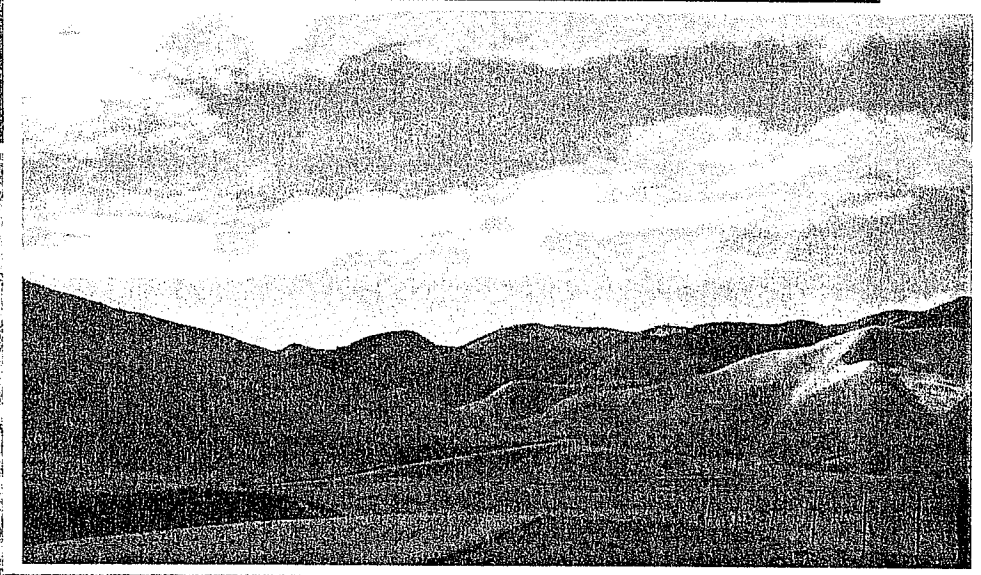
Fresno, CA 93720
Phone 559-2561449
Fax 559-2561478

Del Puerto Canyon Reservoir Reconnaissance Level Fatal Flaws Feasibility Assessment



Prepared by:

URS

December 2007

TABLE OF CONTENTS

1 INTRODUCTION

The Del Puerto Water District (DPWD) engaged the services of URS to perform a reconnaissance level fatal flaws feasibility assessment regarding the construction and operation of a dam and reservoir on Del Puerto Creek in the foothills of the coast range mountains west of Patterson, CA. A Del Puerto Canyon Reservoir (DPCR) would provide additional off-stream storage on the west side of the San Joaquin Valley that may provide water supply and other benefits to DPWD and other water users that currently rely on water supplies exported from the Sacramento-San Joaquin Delta (Delta). DPWD believes that multiple benefits can be obtained with new off stream storage in Del Puerto Canyon and is interested in determining if construction of such a reservoir could provide the benefits as described below.

1.1 POTENTIAL BENEFITS

Efficient Water Management. Recently there has been increasing discussion and focus by the U. S. Bureau of Reclamation (USBR), California Department of Water Resources (DWR), elected officials and environmental groups at regional, state and national levels on making better, more efficient use, of existing water supplies. Both the Central Valley Project (CVP) and the State Water Project (SWP) are storage limited south of the Delta; water otherwise available for delivery, be it prior year's carryover supply or new year supplies, are sometimes adversely impacted due to storage limitations south of the Delta. The additional storage provided by a PDCR could potentially increase surface water supplies south of the Delta and allow for more efficient use of existing supplies.

Drought Reserve Supplies. Increased storage can provide for additional exports when water is available in wet years thereby providing carryover supply for use during subsequent water-short years.

Catastrophic Supply Interruption Mitigation. The ongoing Delta Risk Management Strategy (DRMS) studies by DWR have identified the potential for catastrophic water supply interruption due to Delta levee failures. Storage provided in the DPCR could be a very valuable resource in the event of such a catastrophe.

Power Generation. DPCR could be constructed as a pumped storage project utilizing seasonally available off peak power for filling. Operationally, DPCR would be filled roughly between the late fall and early spring and then drawn down while generating power nominally from late spring through late summer or early fall. Power generation spanning approximately May through September would occur during a seasonally high demand (high value) period and its location is well placed within the regional power grid to assist in meeting peak loads. Additionally, a reservoir and sufficiently sized forebay could also be used for daily peaking power generation using a renewable source.

Local/Regional Water Supply. Western Stanislaus County is experiencing significant growth and growth pressure in all sectors, including residential, commercial and industrial uses. In the foreseeable future, water supplies necessary to support continued growth will become a limiting factor. Development of DPCR could assist in meeting the area's future water needs without directly impacting local agricultural water users.

Flood Control. As a stand alone project, this is one of the most obvious, easily identifiable and quantifiable benefits of DPCR drawing some level of local, regional, state and federal support. In addition to downstream flood control benefits, Del Puerto Creek can generate flows high enough to threaten the structural integrity of Interstate Highway 5 as well as the California Aqueduct and the Delta-Mendota Canal. As such, construction of DPCR could reduce the potential of a catastrophic supply interruption within the CVP and SWP and disruption of interstate commerce traffic reliant on I-5. Beyond that it may be possible, through integrated operations and other "plumbing system" revisions, to assist in providing flood control benefits for Salado Creek and (possibly) Orestimba Creek.

Environmental Enhancement. Del Puerto Creek is an ephemeral stream that meanders from the coast range mountains across the valley and eventually reaches the San Joaquin River. Flows are normally of relatively short duration and only rarely reach the river. Habitat features along the creek are minimal and its lower reaches are little more than meandering canals. Flood water captured in and otherwise stored in DPCR could be used to provide seasonally reliable flows in upper portions of Del Puerto Creek to assist in creating areas of riparian habitat and a migration corridor between the San Joaquin River and the coast range mountains.

San Joaquin River Restoration. One of the elements of the San Joaquin River Restoration settlement between the USBR, Friant Water Users Authority and the Natural Resources Defense Council environmental coalition is a water management goal that includes the recapture, recirculation and reuse of restoration flows. Additional storage south of the Delta may assist in the implementation of the water management goals of the litigation settlement.

Recreation. Other then the San Joaquin River, there are no other surface water bodies between the Delta and San Luis Reservoir that provide opportunities for fishing, water skiing, lake-side camping etc. making DPCR attractive to the area's burgeoning population.

1.2 STUDY PURPOSE

The purpose of this initial feasibility assessment is to identify any major flaws that might preclude further consideration of the DPCR. This report constitutes the initial stage of the first phase of feasibility assessment involves primarily the physical aspects of the dam location based on initial review of topographic and geotechnical conditions as well as conceptual operations. The following project elements were analyzed as part of the assessment: dam location and potential sizing; geologic and seismic considerations; potential operational scenarios and Potential project cooperators. Subsequent phases of study will include preliminary review of environmental constraints, review of land ownership and land values, evaluation of more detailed operations plans and preliminary cost estimates.

Based on this initial reconnaissance study and site visits by URS geotechnical and dam engineers and review of available data related to geotechnical, seismic, and topographic features, URS considers Site 1 to be suitable for a dam of up to 400 feet in height with a capacity of approximately 120,000 acre-feet (AF) and Site 2 to be suitable for a forebay with a capacity of up to approximately 10,000 AF.

Figure 1 shows the general location of the potential dam site and forebay.

2 ALTERNATIVE DAM LOCATIONS

2.1 DAM

2.1.1 DAM LOCATION

Two locations within approximately two miles of each other were considered for the dam, . The Site 1 dam is located approximately two miles west of Interstate 5 (I-5) and would have a maximum water surface elevation of 700 feet above sea level. The reservoir is characterized by a narrow canyon and would extend approximately four miles upstream of the dam when full. The Site 2 dam would be located less than one mile west of I-5 and would have a maximum water surface elevation of 450 feet. The reservoir would be shallower and wider and would require rim dikes or saddle dams. Figures 2-1 through 2-4 show aerial views and topographic maps with the inundation area for the two alternative sites.

Figures 2-5 and 2-6 show curves of surface area and volume versus water surface elevation for Sites 1 and 2, respectively. The curves show that Site 1 at the maximum water surface elevation of 700 feet would hold approximately 120,000 AF while Site 2 at a maximum water surface elevation of 450 feet would hold approximately 84,000 AF.

Both locations seem to be acceptable dam sites, but Site 1 is the preferred site for several reasons:

1. The valley topographic section is slightly smaller.
2. The foundation conditions appear to be more favorable based on geologic reconnaissance mapping.
3. The reservoir rim is more stable.
4. The reservoir rim is better defined, and provides reservoir closure without the need for rim dikes or saddle dams.
5. The downstream site can be used to create a balancing reservoir or forebay that can be used to facilitate off-peak pumping and pumped-storage peak generation.

The Site 2 disadvantages include a smaller maximum storage volume, the need for rim dikes, geologic and seismic instability and the inability to construct a reasonably sized forebay between the California Aqueduct and the reservoir.

FIGURE 2-5
SITE 1 – 700 FOOT ELEVATION – GROSS STORAGE VS. SURFACE AREA

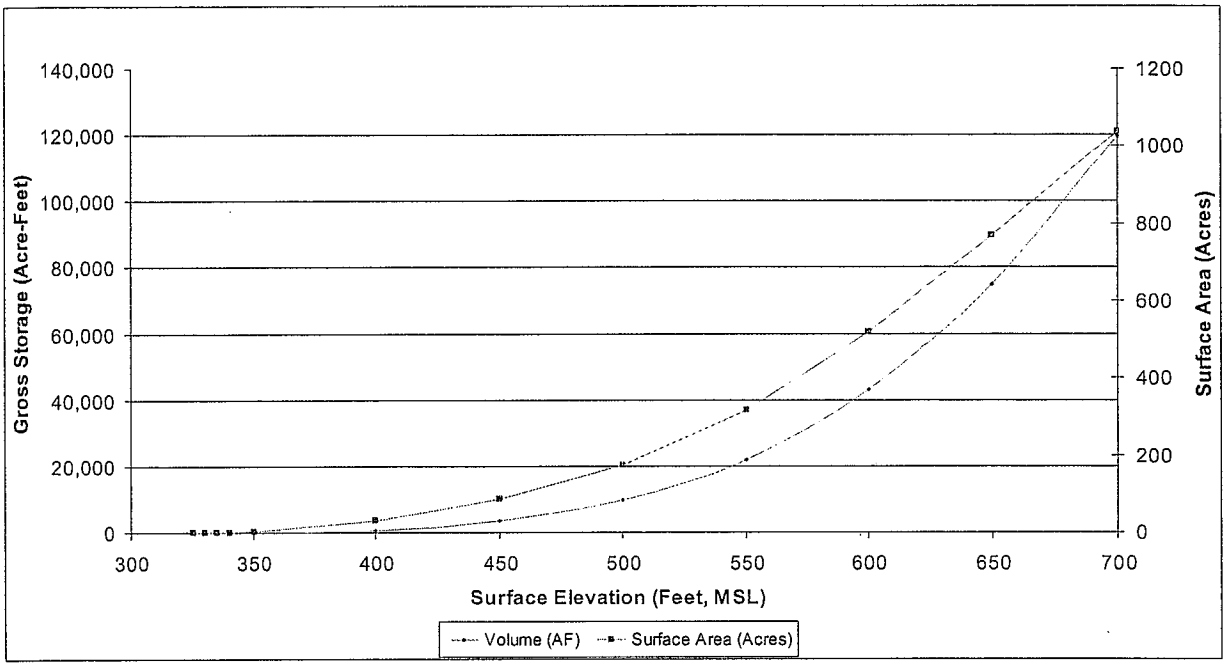
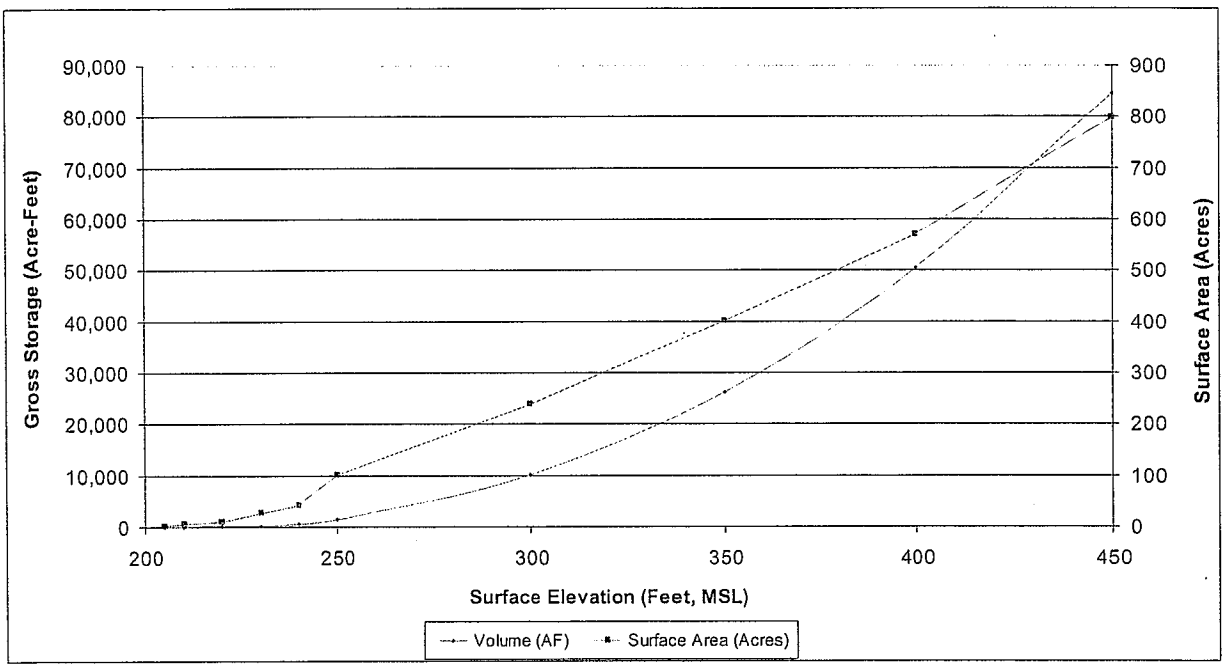


FIGURE 2-6
SITE 2 – 450 FOOT ELEVATION – GROSS STORAGE VS. SURFACE AREA



2.1.2 DAM TYPE

The lack of a suitable site for an abutment spillway requires that the spillway be integrated into the dam. A concrete gravity structure, constructed of either roller compacted concrete or conventional concrete is the logical choice for the preferred dam site. The foundation bedrock present at the site is favorable for this type of dam. Concrete faced or impervious core rockfill structures would not be suitable for the site because of a lack of a suitable location for an abutment spillway. Unconventional arrangements involving tunnel or siphon spillways, or side channel spillways, are unappealing because of the magnitude of the design flow and the risks/uncertainties associated with such approaches. Additionally, an arch dam is not an appropriate solution at this site, as the foundation rock is relatively deformable, and seismicity is high.

The selected configuration therefore includes a conventional gravity structure with either a gated or ungated spillway arrangement. The gated arrangement would provide better control over the headwater levels. However, an ungated arrangement would require less maintenance and has less potential for mechanical problems. The selection of the spillway arrangement will be carried out in detail in later stages of the studies.

2.1.3 DIVERSION DURING CONSTRUCTION

A number of options for diversion during construction were considered during the development of the design concept for the dam. One conventional approach for diversion involves the construction of tunnel(s) through the abutment, with a cofferdam used to divert water from the creek and away from the construction area. Such an arrangement is considered to be expensive in light of other possibilities at this site as the dry season flows are relatively low.

The assumed diversion concept involves the construction of small upstream and downstream cofferdams and a low-level conduit through the base of the concrete dam. At 8 feet x 8 feet x 250 feet long, this culvert would be sized to pass dry season flows. It would be plugged at the conclusion of construction. An option would be to use it later as low level outlet.

2.1.4 ACCESS TO THE DAM SITE

Several options were investigated for construction and permanent access to the dam site. These included:

- A road on the north bank of Del Puerto Creek connecting to the main road about 5 miles from the dam.
- A road on the south side of Del Puerto Creek connecting to the main road about 5.5 miles in from the dam.

During construction, the most convenient and frequently used access to the dam will probably be on the south side of the creek. Once access to the dam site is developed on the south side of the creek, the contractor would probably develop a temporary access to the north side of the creek using culverts and dumped fill. Eventually, there will be a need for more permanent access to provide a means to support construction activities on the south side of the creek. Furthermore, the assumed development configuration described below does not envision a permanent bridge over the finished dam, and therefore, a means of permanent access to the north side of the creek will be required.

2.1.5 SPILLWAY CRITERIA

The sizing of the spillway is governed by the magnitude of the design flood, and influenced by the width of the creek channel. The probable maximum flood will be used as the basis for the spillway design flood and will be determined during later phases of the project. It would be contained within the walls of the spillway without significant damage. The hydraulic design would be optimized for best performance for a flood of lesser magnitude, such as a one in 1000 year event. Such an approach is acceptable for a concrete dam of the size contemplated for the Project.

The gated option would have the ability to provide better control over headwater level during floods. However, in the initial analysis, the ungated concept has been assumed, as the overall cost including operation cost of the ungated option is estimated to be lower. Secondly, the ungated option can better tolerate floods in excess of the design flood, when overtopping may occur

3 PRELIMINARY FACILITIES LAYOUT

3.1 INTRODUCTION

This section describes the proposed layout of the preferred dam and forebay sites and discusses assumption regarding general construction and operational issues.

3.2 GENERAL ARRANGEMENT

3.2.1 CONCRETE GRAVITY DAM

The concrete gravity dam for the selected reservoir option and dam location (Site 1, Reservoir Elevation 700), is about 1800 feet in length, and would be about 400 feet high at maximum section. The crest of the dam is assumed to be 25 feet wide at Elevation 700 feet.

The dam would be constructed by placement of successive lifts of roller compacted concrete (RCC). The crest width of 25 feet would permit construction by RCC. The upstream surface of the dam would be faced to control seepage. This could consist of cast-in-place concrete or pre-cast elements. The downstream face of the dam and overflow sections would consist of cast-in-place concrete.

For the dam foundation, fresh, sound rock is exposed at the surface in the creek section. Elsewhere, foundation grade bedrock should be found at relatively shallow depths beneath a thin superficial mantle of soil. Foundation preparation will probably require removal of a 20 ft layer of existing material, and minor foundation shaping, plus feature grouting, and curtain grouting . A foundation gallery will be provided from which grout and drainage curtains can be constructed. The gallery would be intersected by the diversion culvert but grouting in this section could be completed from the surface at the beginning of construction, or from inclined grout holes from elsewhere in the grouting gallery.

3.2.2 FOREBAY

The proposed forebay dam is located at Site 2, which was eliminated as the site of the main dam, but is acceptable for a smaller forebay. The forebay will be controlled by an approximately 120 ft high, 300 ft long concrete overflow structure, providing a regulating reservoir for filling and emptying the main reservoir and for connection to the California Aqueduct. The forebay will also act as the lower reservoir when the project functions in a pumped storage mode. The forebay control structure will also include an intake and conveyance system to a pumphouse located next to the California Aqueduct.

3.2.3 SPILLWAY

The spillway is assumed to be an ungated concrete structure, integrated into the center portion of the dam with an ogee crest. The spillway ogee, chute apron, and flip bucket would be constructed of high strength, abrasion resistant concrete.

3.2.4 INTAKE

The reservoir intake (location where water will be released from the reservoir for generation and return to the Aqueduct) will connect to a penstock leading into the powerhouse/pump station located at the forebay reservoir. The intake is assumed to be located in bedrock in the right abutment of the dam. It would consist of a reinforced concrete structure with a bell-mouth shaped opening to minimize hydraulic losses. The area upstream of the intake would be excavated to firm rock and the intake will slope down toward the bottom of the reservoir. The support requirements for the portal will be largely dependent on the amount of weathered bedrock that requires removal or stabilization before encountering fresh rock. Surface runoff and debris from the area above the portal may need to be controlled/deflected during construction and operation.

The intake would be protected by a removable trashrack sized so that the maximum velocity of flow through the gross area of the intake would not exceed approximately 1 meter per second (m/s). The trashrack would be serviced from the intake deck; no dedicated trashrake is included. If necessary, a mobile crane, dedicated to the Project, would be used to dislodge and remove any larger objects that may obstruct the intake. The crane would also be used to place a bulkhead as needed for downstream intake maintenance.

3.3 CONSTRUCTION COST AND SCHEDULE

Construction cost and schedule will be prepared at later stages of development of the project, and are not included in this report.

3.4 CONSTRUCTION PLANNING

A reconnaissance level construction plan has been prepared to serve as the basis for developing the Project and at later stages of the study, for the cost estimate. As described below, the plan addresses the following components required to complete the Project:

1. Site Facilities
2. Construction Methods
3. Construction Materials

3.4.1 EXISTING SITE FACILITIES

An existing road leads to the dam site areas. This road, which originates in Patterson and generally parallels the creek, will likely require some improvement to facilitate construction activities.

During construction, the contractor will maintain the access roads. Temporary roads will be required to spoil areas. At project completion, the roads to all permanent facilities will be upgraded and finished with appropriate shoulders, drainage and all-weather gravel surfacing. Permanent access roads will be constructed to the south side of the dam.

Working areas will be developed near the dam and other areas as needed. Aggregate processing and concrete batching facilities will be established by the contractor as needed to suit their specific work plans.

3.4.2 CONSTRUCTION METHODS

General. Conventional construction methods are expected for all aspects of the works. Surface excavations would use conventional earth moving and rock excavation equipment. The scheduling of the works will depend on the contractor's plans for mobilization of equipment and labor to the site.

Dam. Access will be constructed to the dam on the right side of the creek from a downstream location. During average dry season flows, access to the left side of the creek at the dam site could be achieved in a variety of ways (e.g. fording, culverts, etc.). Wet season and permanent access to the right side of the creek will be required.
Diversion will be achieved by construction of a concrete culvert on the right side of the creek bottom and cofferdams to divert dry season creek flow through the culvert. The culvert will be placed directly into fresh bedrock with only minor shaping required. Cofferdam construction, as presently conceived and shown on the figures, will involve cyclopean concrete using readily available creek bottom materials (cobbles, boulders) and concrete. The size of the culvert will be – 8 feet by 8 feet.

Based on geologic information for the dam site, it is expected that excavation to reach foundation grade rock will be minimal. Roller compacted concrete (RCC) construction is assumed throughout the dry season. Wet season flows could overtop the partially completed dam but would not impact the overall project completion schedule. Conventional reinforced concrete will be used to complete the spillway and non-overflow surfaces, providing a water-tight membrane and durable wearing surface. Foundation grouting and drainage can be performed at any time once the foundation gallery has been constructed. Construction will also include installation of an ecological release system to provide minimum in-stream flows during periods of low flow, and site works such as lighting, drainage, and access.

As mentioned above, the diversion scheme and construction planning envision the remote possibility of overtopping of partially completed structures in the lower portion of the valley during the wet season. Construction activities would be scheduled so that during the wet season, there is little to no work on-going in locations that are at a significant risk. The structures that could be overtopped are massive concrete structures founded on sound rock in the creek valley.

The diversion conduit would be excavated on the right side of the creek channel during the later half of the wet season, with a target completion near the conclusion of the wet season. Diversion conduit construction would take place adjacent to the creek channel. Stream flows would need to be closely monitored. As the wet season is ending, the cofferdams would be constructed, and the

creek, as it is entering into the lower flow season would be diverted through the diversion channel. Cofferdams and the diversion channel have been sized to handle the expected 20-year dry season flood. Once the cofferdams have been completed, and the dam site has been dewatered, an aggressive program must be carried out to clear the foundation and begin placement of RCC. The placement of an RCC structure should progress rapidly, with sufficient logistical support. The dam can be raised sufficiently through the dry season so that once the next wet season begins; the massive RCC structure is substantially complete.

The diversion conduit would be left open during the second wet season. During periods of heavy rainfall, water may build up behind the dam, but would drain after the high flow event subsides. There is a possibility that the water could surcharge and overtop the partially completed structure, but the structure can be prepared for such an eventuality, and no significant damage would be expected to occur.

The creek is believed to carry a significant sediment load, particularly during the wet season. There may be some sediment deposition during the construction period. There may also be some movement of bed material toward the dam site. The presence of the cofferdam would impede bed load movement, and may cause some buildup of sediment. Within one season, the buildup of sediment and bed material is not expected to be a problem. High velocities developed at the entrance to the diversion channel should be sufficient to sweep material through the diversion channel.

3.4.3 CONSTRUCTION MATERIALS

Major equipment and materials for project construction will largely be imported to the site.

The spoil from foundation excavation and preparation will result in surplus material that will be hauled to spoil areas within one mile of the works.

4 EXISTING CONDITIONS

Existing Conditions/Structures that will require mitigation include local utilities that service facilities both near the project site as well as high power lines that run transversely across the reservoir site and deliver power to locations to the south.

The projected water levels may require the relocation of rural residential properties in the area. If the properties remain, both phone service lines as well as power lines that service the properties will need to be relocated outside of the projected inundation area.

In addition to the residential power lines, high voltage (12kV) power lines that parallel Interstate 5 will need to be relocated due to the inundation area created by the forebay. The high voltage lines run north to south and fall within a 2,200 foot wide section of the forebay that will be full during normal operation of the facility.

Shell Oil operates a crude oil pipeline that also runs parallel to Interstate Five at this location and will potentially be affected by the forebay inundation area. The pipeline consists of a 20 inch diameter steel pipe that is buried 5 feet below ground and operates at 500 to 600 psi. This structure will also need to be relocated to a location outside of the project area.

Finally, Del Puerto Canyon Road will need to be relocated and major improvements to existing local roads will be required. Stanislaus County operates an Off Highway Vehicle Park, called Frank Raines Park, located approximately 17 miles west of the city of Patterson. Del Puerto Canyon Road is the main access road to the park, but traffic can be rerouted to Highway 130 to access the park from the west. However, if the residential properties remain, alternative routing may be required to make the route feasible.

5 DAM FOUNDATION AND GEOLOGIC ASSESSMENT

5.1 GEOLOGIC UNITS

Regional geology is summarized in Figure 5-1; Del Puerto Canyon is indicated as "DP" on the figure. Rocks exposed within the project area are comprised of the Coast Range Ophiolite, Franciscan Assemblage, the Great Valley sequence, the Tesla Formation, the Valley Springs Formation, a fanglomerate (the Tulare Formation), and various Quaternary-age alluvial deposits. Geologic descriptions of these rocks are provided in the USGS Miscellaneous Investigations Series Map I-1656. Additional descriptions are provided in USGS Open File Reports 82-393, 82-394, and 93-223 (Dibblee, 1982a; 1982b, and Sowers et. al., 1993). A summary is presented below.

The east flank of the Diablo Range is a homocline in which the degree of deformation, as reflected in the dip of the strata, increases from south to north (Figure 5-2). This increase is most notable for the younger Tertiary-age rocks. The change in dip takes place over a relatively short distance just southeast of the forebay where a local reversal of dip is present in the Tesla Formation. This small fold dies out northward and southward (Bartow, et. al., 1985). An unnamed fault truncating Great Valley sequence (Moreno Formation) rocks is located north and west of this fold (see Figure 5-3). An approximately 2,500 foot long unnamed fault offsets Great Valley sequence (Panoche Formation) rocks near the western end of the Site 1 inundation area. The San Joaquin and Tesla-Ortigalita faults are described in the Seismic Hazards Identification section (Section 7).

5.1.1 MESOZOIC-AGE ROCKS

Coast Range Ophiolite

An exposure of the structurally dismembered Jurassic-age ophiolite at the base of the Great Valley sequence is located to the west of the western extent of the reservoir resulting from Site 1 development. Each of the three members is present; ultramafic rocks, gabbro, and keratophyre. These are the oldest rocks exposed in the area of the project and are in fault contact with the younger Franciscan assemblage and Great Valley sequence.

Franciscan Assemblage

The Fransican Assemblage is exposed west of the Site 1 inundation area and is separated from the Coast Range Ophiolite and the Great Valley sequence by the Tesla/Ortigalita fault. This fault zone is not a remnant of the Coast Range thrust as formerly supposed, but is a high-angle fault of Tertiary age. These rocks comprise the core of the Diablo Range and consist of mélanges and coherent sandstone units. Sparse fossils indicate ages of Late Jurassic to Late Cretaceous locally.

Great Valley Sequence

The Great Valley sequence within the project area consists of, from the base upward, a shale unit (Lower Cretaceous), the Panoche Formation (Upper Cretaceous), and the Moreno Formation (Upper Cretaceous). The Panoche Formation disconformably overlies the basal shale unit and is predominantly siltstone or shale in its lower part and predominantly sandstone in its upper part.

The Moreno Formation conformably and gradationally overlies the Panoche Formation along the east flank of the Diablo Range. The Moreno in the project area contains prominent sandstone interbeds. The Site 1 reservoir and most of the forebay would be within Great Valley sequence rocks. The Site 1 dam would be located in sandstone of the Panoche Formation.

5.1.2 CENOZOIC-AGE ROCKS

Tertiary Rocks

The Tesla Formation overlies the Moreno Formation and unconformably underlies younger Oligocene-age strata of the Valley Springs Formation near the eastern end of the Site 1 forebay. The Tesla formation is comprised of a medium to fine grained sandstone unit overlain by a sandy siltstone unit in the project area. The nonmarine gray to blue friable sandstone mapped as the Neroly Formation and the gray clay or mudstone and gray pebble-conglomerate and sand mapped as nonmarine sedimentary rocks by Dibblee (1982b) are described as the Valley Springs Formation and fanglomerate by Bartow, et. al. (1985). Based on mapping by Bartow, et. al., the Neroly Formation pinches out near Ingram Creek, north of the project area. The fanglomerate is composed principally of detritus derived from the Franciscan assemblage or Great Valley sequence. The fanglomerate lies unconformably on the Valley Springs Formation and is considered to be late Miocene to early Pliocene in age. The Site 1 forebay dam would be located in the fanglomerate.

Quaternary Alluvium

Dibblee (1982b) distinguished quaternary alluvium within the project area into older alluvium and alluvium. Bartow, et. al. (1985) differentiated quaternary deposits in the area into several units including Los Banos, San Luis Ranch, and Patterson alluvium. These divisions were primarily on the basis of relative age determined from geomorphic and pedologic criteria such as relative topographic position in a sequence of inset alluvial fans or stream terraces, relative degree of soil profile development, superposition in a vertical sequence indicated by buried soils or unconformities, and relative degree of surface modification, including development of microrelief or dissection. Sowers, et. al. (1993) provided more detailed distinction between quaternary-age fluvial deposits exposed at the site.

Alluvial materials could present a geologic hazard to structures founded on them, if they are susceptible to liquefaction. Liquefaction is a phenomenon during which loose, saturated, cohesionless soils (generally sandy soils) temporarily lose shear strength during ground shaking induced by severe earthquakes. The dam will be founded on bedrock and will not be affected by liquefaction. Other reservoir system features such as pumping/generating plants and pipelines may be constructed on alluvium and the design of their foundations must evaluate potential liquefaction and include mitigation measures.

5.2 DAM FOUNDATION

Based on literature review and field reconnaissance of the Site 1 dam location, the dam foundation will be excavated until rock with strength required to support the dam is found. Generally, for a concrete dam of this size, moderately weatherd or better rock would be acceptable. The infilling of fractures present in the rock mass will also have an influence on the

selected foundation level, sometimes requiring deepening of the excavation or other particular foundation treatment to get to a foundation on groutable rock. Foundation excavation will result in removal of all alluvium and colluvium and potentially 5 to 20 feet of the underlying Panoche Formation sandstone to reach moderately weathered rock.

The foundation for the Site 2 dam would require excavation through alluvium, colluvium, landslide debris, and highly weathered fanglomerate to reach moderately weathered fanglomerate.

5.3 Reservoir Sediment Accumulation

There will be sediment accumulation in the reservoir, although sediment accumulation is not expected to be a significant problem in the upstream site due to the low sediment in a majority of the water used to fill the reservoir from the Aqueduct and the comparatively limited input from the watershed area.

6 SLOPE STABILITY EVALUATION

6.1 SLOPE STABILITY

Design of the proposed Del Puerto reservoir system will need to consider the presence of existing landslides and the effect of reservoir operations on the surrounding slopes. Concerns about slope instability have reportedly impacted rates of reservoir drawdown at the San Luis reservoir south of the project area.

Numerous landslides within and around the proposed reservoir system are shown on published geologic maps of the area. The Stanislaus County General Plan (1994) identifies rocks exposed in the western portion of the County (essentially the area west of Interstate 5) as geologic formations with the potential to slide and maps multiple landslides in the Del Puerto Creek area. More detailed geologic mapping by Bartow et. al. (1985) shows several landslides in the project area (See Figure 6-3). Landslides are also shown within the project area on geologic quadrangle maps by Dibblee (1982a, 1982b) and Sowers et. al. (1993). Landslides mapped within and around the forebay area by Dibblee and Sowers et. al. are shown in Figure 6-4. In addition, unmapped landslides could be present throughout the project area.

Landslides within the project area are most prevalent in Moreno Formation rocks and appear to initiate in the weaker shale member. These landslides represent geologic hazards to project structures built on them. In addition, operation of the forebay could potentially reactivate the landslides.

Based on studies of other reservoirs, slopes around reservoirs tend to be unsaturated except during the rainy season before reservoir construction, and infiltrated water usually can flow out of the slopes without affecting their stability. When slopes are saturated by reservoir water for the first time, their stability is affected and small failures can occur. This phenomenon is especially affected by reservoir fluctuations and can continue up slope, potentially disrupting the stability of the entire landslide prone slope (Fujita, 1977). A study of landslides associated with Japanese reservoirs found that 60 percent of reservoir landslides occurred in the period of sudden drawdown of water level, and the remaining 40 percent occurred during reservoir filling, including initial storage of water (Fujita, 1977, Liao, et. al., 2005).

The presence of landslides within and around the proposed reservoir area is not unique to the site under consideration and does not necessarily represent a fatal flaw. However, potential slope instability caused by the construction or operation of the project represents a risk that can in some cases be mitigated, but cannot be eliminated.

7 SEISMIC HAZARDS IDENTIFICATION

In California, earthquakes represent the most severe loading some dams will experience. Strong ground shaking can result in instability of the dam itself, strength loss of the foundation, instability of the natural reservoir rim, and release of the reservoir by a seiche. Active faults within the foundation of the dam have the potential to cause damaging displacement of the structure (Fraser, 2001). The entire reservoir system, including the proposed dams at Site 1 (reservoir) and Site 2 (forebay) will likely experience strong ground shaking in the future, and their design should take this into consideration. Ground rupture of the San Joaquin fault could occur within the project area.

7.1 FAULT RUPTURE

Herd (1979) inferred the presence of a zone of east-side-down normal faulting, termed the San Joaquin fault zone, along the range front through the project area. The faults of this zone are not exposed and were believed to be buried by upper Pleistocene and Holocene alluvium. Evidence suggesting displacement along the fault included a truncated Pleistocene terrace at Ingram Creek and the east-facing escarpments bounding the older alluvial deposits north and south of Orestimba Creeek (Bartow, et. al., 1985).

Later work, including trenching of the San Joaquin fault at Lone Tree Creek northwest of the project area, identified a monoclinal fold in which alluvial bedding dips 3 to 6 degrees down the 75-meter long scarp face then flattens out again at the bottom of the scarp. This deformation suggests the presence of a blind thrust fault at depth, which may pose a significant earthquake hazard to the western margin of the Central Valley (Sowers, et. al., 1997).

More recent work showed that the San Joaquin fault is an active thrust fault; work continues to evaluate the fault as a seismic source. The San Joaquin fault is associated with the Coast Range-Sierran Block boundary zone defined by Wong and others (1988). Despite its strong geomorphic expression, the San Joaquin fault is not presently designated an Earthquake Fault Zone by the California Division of Mines and Geology, and its surface trace has not yet been documented in field exposure. Scarps of the San Joaquin fault appear to offset possible late Pleistocene or younger alluvium at the range front at Ingram Creek and at the mouth of Lone Tree Creek which are also along the trace of the fault at about 5 and 12 miles northwest of Del Puerto Canyon, respectively. The fault appears to offset more than one alluvial terrace at Lone Tree Creek. Interpretation of trenching at the Lone Tree Creek site indicates that the scarp is a broad warp, or monoclinal fold. The San Joaquin fault does not reach the surface at Lone Tree Creek and is interpreted to be a blind thrust or reverse fault at depth. The findings are consistent with previous models of the eastern front of the Diablo Range by authors such as Wong et. al. (1988), Sowers et. al., (1992), and Unruh et. al., (1992) (Sowers and Ludwig, 1999).

Recent earthquakes on hidden or "blind" thrust faults (the 1983 M 6.5 Coalinga earthquake, the 1994 M 6.7 Northridge earthquake) show that lack of surface rupture does not preclude a significant seismic hazard. The timing and frequency of seismic activity on the San Joaquin fault are not well known. The presence of a two-to-three times greater slope and vertical offset on the older terrace compared to the younger terrace at Lone Tree Creek suggests at least two seismic

events have taken place on the fault since the formation of the older terrace. Sowers and Ludwig (1999) estimated the vertical displacement of the fault to be 0.11 millimeters per year. The USGS database of potential sources for earthquakes larger than M 6 in Northern California indicates that the Great Valley 7 section of the fault could produce a M 6.7 earthquake at an effective recurrence time of 560 years and that the fault has a slip rate of 1.5 millimeters per year (USGS, 2006a). The San Joaquin fault presents ground shaking hazard to the reservoir system. The fault rupture hazard is not well defined but could affect the conveyance from the forebay to the California Aqueduct, which might also be affected.

7.2 GROUND SHAKING

Numerous earthquakes occur each year along California's major faults including the San Andreas, Calaveras, Hayward, and Nacimiento faults. Ground shaking produced by earthquakes can produce damage within Stanislaus County at varying intensities. The western part of the county can be expected to experience shaking that could cause considerable damage to ordinary structures (Stanislaus County, 1994). .

There are numerous active, and conditionally active seismic sources within 100 kilometers of the site. The DSOD defines an active fault as having ruptured within the last 35,000 years. A conditionally active fault is defined as having ruptured in the Quaternary, but its displacement history during the last 35,000 years is unkown. Fault inactivity is demonstrated by a confidently located fault trace that is consistently overlain by unbroken geologic materials older than 35,000 years (Fraser, 2001). Characteristics of the active Ortigalita and San Andreas faults are described due to their proximity to the site and prominence in regional seismicity, respectively. Other significant active and conditionally active faults would be addressed in a more detailed study of seismic hazards for the site.

In the Del Puerto Canyon area, the Tesla fault and Ortigalita faults are linked as the Tesla-Ortigalita fault (Cotton, 1972). The Ortigalita fault zone is a major Holocene dextral strike-slip fault in the central Coast Ranges that is an eastern part of the larger San Andreas fault system. The Tesla-Ortigalita fault is less than a mile from the western edge of the Site 1 inundation area at its closest point, corresponding to about five miles from the dam at Site 1. The active Ortigalita fault zone extends from about 12.4 miles northwest of San Luis Reservoir southeast to the vicinity of Panoche Valley. The Ortigalita fault zone is characterized by echelon fault traces separated by pull-apart basins. The fault zone is divided into 4 sections. Late Quaternary slip rates and recurrence intervals are unknown, although the recurrence interval for the entire Ortigalita fault zone is believed to be about 2,000 to 5,000 years. The vertical slip rate is at least 0.01-0.04 millimeters per year. The dextral slip component is probably greater than the vertical component and is estimated to be 0.5 to 1.5 millimeters per year (USGS, 2006b). The USGS database of potential sources for earthquakes larger than M 6 in Northern California indicates that the Ortigalita fault could produce a M 6.9 earthquake at an effective recurrence time of 1,100 years and that the fault has a slip rate of 1 millimeter per year (USGS, 2006d).

The Santa Cruz section of the San Andreas fault is about 40 miles from the site at its closest point. This section of the fault has an estimated slip rate of 14 millimeters per year and can produce M 7.0 earthquakes at an effective recurrence time of 400 years (USGS, 2006c). The

684-mile-long San Andreas fault zone is the principal element of the San Andreas fault system, a network of faults with predominantly dextral strike-slip displacement that collectively accommodates the majority of relative north-south motion between the North American and Pacific plates. The San Andreas fault zone is the most extensively studied fault in California, and perhaps the world. The San Andreas fault zone is considered to be the Holocene and historically active dextral strike-slip fault that extends along most of coastal California from its complex junction with the Mendocino fault zone on the north, southeast to the northern Transverse Range and inland to the Salton Sea, where a well-defined zone of seismicty transfers the slip to the Imperial fault along a right-releasing step (USGS, 2006b).

Two major surface-rupturing earthquakes have occurred on the San Andreas fault in historic time: the 1857 Fort Tejon and 1906 San Francisco earthquakes. Additional historic surface rupturing earthquakes include the unnamed 1812 earthquake along the Mojave section and the northern part of the San Bernardino Mountains section, and a large earthquake in the San Francisco Bay area that occurred in 1838 that was probably on the Peninsula section. Historic fault creep rates are as high as 32 millimeters per year for the 82-mile-long creeping section in central California with creep rates gradually tapering to zero at the northwestern and southeastern ends of the section. Average slip rates for the San Andreas fault zone exceed 5.0 millimeters per year (USGS, 2006b). The USGS database of potential sources for earthquakes larger than M 6 in Northern California indicates that the Santa Cruz section of the fault could produce a M 7.0 earthquake at an effective recurrence time of 400 years and that the fault has a slip rate of 14 millimeters per year (USGS, 2006c).

In the past, the DSOD used a purely deterministic method to estimate ground motion parameters for design analysis. Deterministic seismic hazard analysis (DSHA) is time-independent and contrasts with the probabilistic seismic hazard analysis (PSHA) which formally considers event likelihood and the uncertainty of the ground motion estimate (Fraser, 2001). More recently, DSOD Geology Branch staff recommended that a formal consideration of fault slip rate, and ultimately PSHA be incorporated into the deterministic methods of ground motion parameter selection. Procedures now in use by the DSOD to develop design ground motion parameters include limited use of PSHA (Fraser and Howard, 2002). Preparations of DSHA and PSHA for the site are outside of this scope.

The effect of seismic activity occurring on these two faults, and other important faults near the project will need to be assessed at a project-specific level in later stages of the studies. The design of the dam and appurtenant structures will need to address the impact of seismic events on these faults, as for any structure in California.

Fault rupture and ground shaking hazards within and around the proposed reservoir area are not unique to the site under consideration and does not necessarily represent a fatal flaw. However, potential fault rupture or ground shaking caused by seismic activity near the site represents a risk that can in some cases be mitigated, but cannot be eliminated.

8 CALIFORNIA DAM SAFETY GUIDELINES

8.1 BRIEF SUMMARY OF REGULATIONS REGARDING THE CONSTRUCTION OF NEW DAMS IN THE STATE OF CALIFORNIA

The California Water Code (Appendix A) delegates the regulation of dams within the state (other than federal owned) to the Department of Water Resources (DWR), and in particular to its Division of Safety of Dams (DSOD). Except for some few cases, dams classified within the "jurisdictional size" (see Figure 1 below) are subjected to the authority of DSOD. Current or potential owners of dams under the jurisdiction of the DSOD are required to seek authorization from the DSOD prior to the execution of any activity regarding the construction, alteration, repair or removal of such structure.

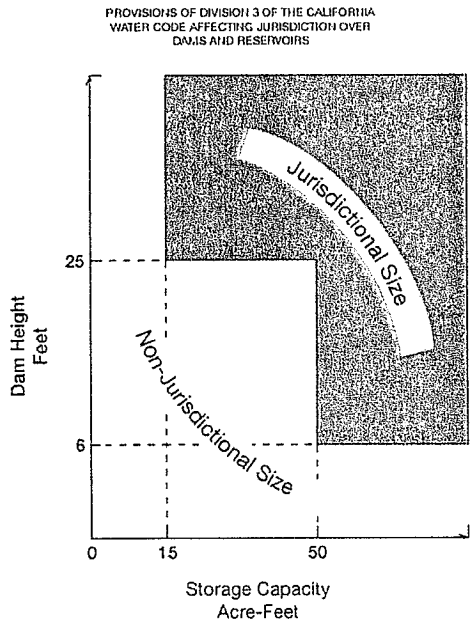


Figure 1. Classification chart used to establish the jurisdiction of DSOD over a particular dam (from http://damsafety.water.ca.gov/jurisdictionalchrt3.cfm)

Prior to formal application for construction of a new dam, the potential owner should file application for water rights with the State Water Resources Control Board.

The owner should also prepare plans and specifications for the proposed dam.

- Once these steps have been completed, an application for approval (form DWR-3 in Appendix B) can be filed with the DSOD. The application must include information regarding soil data, boring logs, geologic report, hydrologic data, as well as structural and hydraulic design notes, as well as evidence of compliance with CCR-310(F)2 (California Code of Regulations) environmental requirements.
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9 OPERATIONAL ISSUES

9.1 CONSULTATION WITH USBR, DWR AND OTHERS

Because of the preliminary nature of this investigation, USBR and DWR representatives were not able to provide specific comments or commitments with respect to potential operations of off stream storage facilities. DWR had previously studied the site and found no significant problems with off stream storage at that location, but eliminated it from further consideration because of it's limited size compared to the potential of the Los Banos Grandes reservoir site. USBR and DWR representatives agree that there is a need for more storage south of the Delta and that additional storage at this site could benefit both projects.

DWR representatives expressed concern regarding excessive drawdown rates, depending on the location of the dam, and this study has considered that in the geologic and slope stability assessment. The rates at which water can be withdrawn from and released into the California Aqueduct will, of course, be subject to priority consideration for SWP operations.

The recent and forthcoming decisions by Judge Wanger regarding operations of the pumps for both projects at the Delta will have a bearing on the nature of the operations and the availability of surplus flows in the Delta. However, reduced flexibility of operations in the Delta is likely to increase the need for increase flexibility of storage south of the Delta.

While there were no specific discussions related to coordination with San Joaquin River Restoration, specifically the Water Management element that includes recapture and reuse of Restoration flows, prior preliminary studies of recirculation and reuse of San Joaquin River water indicate that storage south of the Delta is likely to be a limiting factor.

9.2 CONCEPTUAL OPERATIONS PLAN

The detailed operation plan for the reservoir will be developed once there is a better understanding of the water supply sources and required coordination with CVP and SWP operations. Because of the many possibilities for funding partners and multiple water sources, the sizing of the facilities should allow for maximum flexibility of operations within reasonable cost constraints. The size of the proposed reservoir and forebay would support a conceptual operation plan that would provide considerable flexibility to manage variable times and rates of water availability from the Aqueduct as well as allow for off-peak pumping, on-peak generation and pumped storage for summer peaking generation (i.e. on-peak generation to the forebay and off-peak pumping back into storage).

Under such a conceptual operation, the pumping and generating facilities would be sized to accommodate approximately 625 cubic feet per second (cfs) of pumping capacity and approximately 360 cfs of generating capacity. In the next phase, more refined operations studies will optimize the sizing of the pumping and generation capacity.

The rate of generation would depend on a number of factors, including the maximum rate of allowable drawdown in the reservoir, the capacity of the forebay and any limitations on discharge

into the Aqueduct. The most likely fill period would be December or January through March or April, depending on the water year type, assuming that a majority of the water used to fill the reservoir is surplus Delta flows or water that DPWD or others would choose to store in DPCR rather than elsewhere. It is also possible that water made available for storage at other times of the year could be placed into storage directly or by exchange.

The capacity of the Aqueduct at this location is 10,000 cfs. At most times when water would be expected to be released from the DPCR for use downstream or conveyance to other facilities to the south, pumping at the Delta is limited to the currently permitted capacity of 6,680 cfs, with some of that pumping being diverted at the South Bay Aqueduct. Therefore, there will generally be 3,000 cfs or more of canal capacity available for releases. The likely limiting factor for releasing water from the DPCR will be the drawdown rate in the reservoir. The rate at which water can be diverted from the Aqueduct into DPCR will likely depend on the source and type of water being placed in storage. If the source of water is surplus flows in the Delta, the amount that can be diverted to storage will likely be limited by the difference between the amount that DWR can pump at the Delta and the amount they would otherwise be putting into storage at SLR or sending south for use or storage by SWP contractors. Similarly, the rate at which water from other sources (transfer water, DPWD's CVP supplies, Environmental Water Account water, etc.) can be diverted to storage will likely be limited by pumping capacity at the Delta rather than Aqueduct capacity.

10 POTENTIAL PROJECT COOPERATORS AND FUNDING SOURCES

Given the significant need for new storage south of the Delta, it is likely that DPWD will be able to be somewhat selective regarding project cooperators. The operation of the DPCR will depend almost entirely on cooperation and coordination with CVP and SWP operations. The nature of the relationship with the USBR and DWR relative to DPCR construction and operations will likely depend on the extent to which funding from either agency is involved. At a minimum, operating agreements with both agencies will likely be required to provide certainty regarding the terms and conditions for moving CVP, SWP or other water into and out of the reservoir.

The desirability or need for other cooperating partners will depend on several factors, most likely the nature and magnitude of the funding and the extent to which certainty regarding operations and water sources can be obtained up front. The current theme of funding discussions for new storage seems to be "beneficiary pays", so the extent to which public funds will be available to help finance the reservoir construction will depend on the nature and extent of "public benefits". Most of the grant funds available under Proposition 84 (Integrated Regional Water Management Planning) or Proposition 1E (Flood management) require a regional planning effort involving at least three public agencies. If funding through the water bond currently being debated among the Governor, legislature and water agencies is to be a possibility, DPWD may want to consider seeking to incorporate a placeholder or provisions for other locally funded surface storage. Funding from USBR will require a determination of federal interest and a feasibility study before they could ask Congress for funding. There are also private parties (mostly urban suppliers and urban developers) who may be willing to pay a significant share of cost per acre of storage, depending on the security of that storage. It will be up to the District to determine how much control it wishes to maintain over the operations, water supplies and energy generated by the facility.

TABLE 8-1

POTENTIAL COOPERATING OR FUNDING PARTNERS

Cooperating Entity	Possible IRWMP Partner	Possible Funding Source	Comment
DWR	No	Yes	
USBR	No	Yes	
SLDMWA	Yes	Yes	Water supply
Stanislaus Co. Entities	Yes	Yes	Flood management and water supply
FWUA/NRDC	Yes	Yes	River Restoration
EWA	No	Yes	Environmental benefit
Urban Water Supply Partners	Maybe	Yes	May require guaranteed storage space

September 21, 2010

Patterson Irrigation District

Large DMC Pipeline Project

Westside Integrated Water Resources Plan Submittal

BACKGROUND

Agricultural irrigation and water districts in the San Joaquin Valley have all experienced a decline in water supply reliability in recent years. Between 2006 and 2010, agricultural Federal Central Valley Project water contractors have experienced a 50% average reduction in water supply allocation. These supply reductions, resulting from a combination of drought and environmental restrictions, have created a definite need for additional, reliable water supplies in the western San Joaquin Valley.

PID is proposing to replace its current main canal with a full capacity pipeline system. The pipeline would extend from PID's new Fish Screen Intake at the San Joaquin River, through PID's service area, and terminate into the Delta Mendota Canal, where it could potentially convey up to 95,000 acre-feet of water from eastside San Joaquin Valley purveyors for agriculture on the Westside. This water could be transferred during periods of flow reduction due to drought conditions or environmental constraints associated with transporting water supplies via the Delta. In addition, these same facilities can be used to recover a portion of the San Joaquin River restoration flows earmarked for environmental benefit. This pipeline would also conserve water that would be lost to deep percolation, evaporation or operational wastes and could replace the existing series of lift stations with fewer, more efficient pump stations.

A summary of the potential benefits attributed to this project include:

Environmental Restoration: Increases in releases for transfer would improve water quality and quantity in the San Joaquin River and its tributaries.

Improvement of Water Supply and Reliability: This project has the potential to convey approximately 95,000 acre-feet of water per year from the east side of the San Joaquin Valley to the west side for the benefit of not only the WIWRP plan area, but other IRWM areas to the west and south.

Water Quality Improvement: Increased flows in the San Joaquin River as a result of the operation of this project would likely improve the water quality in the San Joaquin River entering into the Delta.

Water Conservation: New facilities as a result of this project would further reduce conveyance losses and incorporate efficient pumping technologies, making more water available to be distributed to places of need.

Groundwater Management: Additional water supplies made available through this project would reduce the dependence on groundwater wells to offset unreliable surface deliveries on the west side of the San Joaquin Valley.

Water Recycling: This project may provide a feasible conveyance option for current water reuse and recycling efforts looking to convey water from eastern San Joaquin Valley municipalities for agricultural use on the west side.

DETAILED WORK PLAN

Task 1.0 Data Collection and Review

Task 1.0 includes collection and review of background data, including an analysis of existing facilities, utilities, crossings, and easements relevant to the identification of a preferred conveyance alternative for this project. Historical conveyance data and operational capacities for District facilities, the San Joaquin River, and the Delta Mendota Canal will be evaluated for consideration of conveyance alternatives.

Task 2.0 Geotechnical and Topographic Survey

This task includes conducting a field exploration program to explore any geotechnical, seismic, or topographic constraints associated with development of project alternatives. Existing geotechnical report data will be initially evaluated, followed by field explorations and laboratory testing. Shallow soil borings will be taken at relatively constant intervals within the study area for soil sampling and shallow groundwater characterization. Laboratory analysis of soil samples will be used to determine soil classification, strength, compressibility, and corrosion potential. A geotechnical report will be created to summarize field and laboratory investigations. The report will address surface and subsurface soil conditions, potential geologic hazards, trench and excavation stability, design and construction recommendations, and trenchless construction considerations.

Topographic information will be collected using aerial photogrammetry, photography, and field control survey for the proposed study alignment. This survey will identify major physical features including fences, structures, trees, and USA markings for utilities within the study boundary. All data will be documented and compiled into a suitable electronic mapping format, such as AutoCAD.

Task 3.0 Define Agency/Stakeholder Supply Opportunities and Benefits

Preliminary discussions have already been conducted with a number of potential agencies regarding conveyance and water supply opportunities that may be available through the construction of alternative conveyance facilities. This task will include a more detailed analysis of potential quantities and the timing of conveyance opportunities through the study facilities. Input from the technical staff from potential stakeholder agencies will be gathered and quantified to determine the availability and need of supplies within the region. Using the water supply and timing available for these facilities, an estimate of potential water supply and water quality benefit will be assessed, as well as other identified regional benefits discovered through the study process. Agencies will include local and regional irrigation and water districts, as well as the United States Bureau of Reclamation. The results of these meetings and discussions will be summarized and considered in determining facility capacity for various conveyance options produced by the study.

Task 4.0 Alternatives Development and Analysis

Background information, topographic mapping, geologic data, and agency input will be incorporated into an alternatives analysis which will consider various conveyance alternatives and recommended capacities. This analysis may include, but is not limited to the following options: closed-conduit replacement of existing facilities, parallel-to-existing conveyance conduit(s), existing conveyance facilities expansion, and potential sediment management facilities incorporated into all alternatives. Capital costs, operations and maintenance costs, water-use/energy efficiency, constructability, and preliminary CEQA-level environmental analysis will be considered in determining the necessary, pump, pipeline, civil, and electrical improvements for each alternative. Cost, efficiency, and environmental parameters will be considered in comparing each alternative.

Task 5.0 Study Report and Design Recommendations

Task 5.0 includes a study report incorporating all findings as scoped in the preceding tasks, including a summary of the alternatives analysis and a recommendation of a project alternative. For the recommended alternative, the location, design criteria, preliminary details, figures, mapping, estimate of construction and design cost, and other information necessary to support a future design phase of this project will be incorporated into the final report.

Task 6.0 Project Management

This task involves coordination of the work and tasks among project team participants, as well as preparation and management of project schedule and budget, and review of all project deliverables.

DETAILED BUDGET AND SCHEDULE

Attachment 4. PID Large DMC Pipeline Project Study Estimated Budget

Task No.	Task Description	Applicant Funding Match	Grant Request	Total Cost
1	Data Collection and Review	$3,250	$9,750	$13,000
2	Geotechnical and Topographic Survey	$18,000	$54,000	$72,000
3	Define Agency/Stakeholder Supply Opportunities and Benefits	$12,500	$37,500	$50,000
4	Alternatives Analysis	$39,375	$118,125	$157,500
5	Study Report and Recommendations	$28,125	$84,375	$112,500
6	Project Management	$11,250	$33,750	$45,000
Totals		**$112,500**	**$337,500**	**$450,000**

Attachment 5. PID Large DMC Pipeline Project Anticipated Schedule

Task No.	Task Description	2010		2011											
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Notice of Award from DWR														
	Request for Proposal for Consultant														
	Effective Date of Grant Agreement														
	Negotiation and Execution of Grant Agreement														
	Award Study Contract to Consultant														
1	Data Collection and Review														
2	Geotechnical and Topographic Survey														
3	Define Agency/Stakeholder Supply Opportunities and Benefits														
4	Alternatives Analysis														
5	Study Report and Recommendations														
6	Project Management														

Attachment 3 - Work Plan

For West Stanislaus County Groundwater Recharge and Water Resources Project (Project)

Background on West Stanislaus County Water Resources

This Project study focuses on methods and alternatives to achieve comprehensive management of water resources in western Stanislaus County, as part of the Westside Integrated Water Resources Plan (WIWRSP). To date, western Stanislaus County has not pursued a regional water resource management program that addresses water supply, storm drainage, wastewater, environmental concerns, and other issues as a whole. This proposal represents an interest and commitment among various water stakeholders in western Stanislaus County to responsibly manage local resources and acknowledge the goals of the state's Water Plan.

The County of Stanislaus is a major contributor to the economic value of California. According to USDA, Stanislaus County ranks 6th among 58 counties in California for total value of agricultural products sold. [1] The west side of Stanislaus County consistently maintains thousands of acres in valuable crop production.

Other activities important to California's economy include municipal development on the Westside. In 1999, a study commissioned by the County of Stanislaus found significant potential economic development was possible through creating light industrial and business park use along the I-5 corridor, primarily to serve distribution warehousing facilities for retail and wholesale industries. The West Patterson Business Park in the City of Patterson will ultimately provide nearly 9 million square feet of business park and commercial development, with employment expected to exceed 16,000 jobs. Currently, Kohls, CVS, and Grainger have located major distribution warehousing facilities in Patterson.

In addition, future development of the former Crows Landing Air Facility (and vicinity) will provide significant and complementary industrial business park development including general aviation, that will help level the region's historically low jobs to housing imbalance.

The study areas economy is heavily dependent on reliable water supplies. Problems associated with resource management on the Westside Stanislaus County include reliable water supplies, water quality, storm runoff, no storage, limited rainfall. Each of these problems is discussed in greater detail as follows:

- *Water Supply* – Primary water sources for the Westside include groundwater, Californai Aqueduct Delta Mendota Canal (CVP), and San Joaquin River. Drought conditions can significantly reduce deliveries, and there are currently no large storage facilities or

[1] USDA 2007 Census of Agriculture, $1.8 B total market value.

programs. Groundwater is increasingly relied upon as surface supply deliveries are impacted by Bay-Delta issues and limited precipitation.

- *Water Quality* – There are several water quality concerns on the Westside. Groundwater is high in salinity, arsenic and nitrates, and salinity in surface water delivered from the CVP can be relatively high during periods of the year. Municipal and agricultural discharge waters contain salts and other contaminants that may result in the implementation of new programs in the immediate future.
- *Storm Runoff* – Historical flood problems have been noted on all six area creeks, significant issues have been identified for Orestimba Creek and its consistent flooding of the City of Newman and farms in the Central California Irrigation District service area, which are currently being addressed by Stanislaus County and the Army Corps of Engineers. Similar flood issues are associated with Salado and Del Puerto Creeks and the area around the City of Patterson.
- *No Storage* – There are no reservoirs or established water banks in the region. Lack of water storage south of the delta has been a long discussed issue.
- *Limited Rainfall* – Participation in the study area averages less than 12" per year, thus the region is heavily dependent on imported water supplies and the groundwater basin.

The following sections define the Westside Integrated Regional Water Plan, and how the project supports that document, the setting of the study area, and this projects stakeholders.

Original WIWRP

The WIWRP was originally adopted in 2002 and then updated in 2006, and is again being updated this year (2010). The 2010 update includes a strong effort by the San Luis Delta Mendota Water Authority (WA), authors of the WIWRP, to include long range job creation projects (Stanislaus County Crows Landing Air Facility location) as well as communities that were not part of the last two versions of the plan, particularly disadvantaged communities (DAC). Three DACs will benefit from the proposed Project—Grayson, Westley, and Crows Landing. The Project is a logical progression of the water planning efforts in the area and of the WA efforts and previous groundwater banking study for the area (1998), and was added to the WIWRP in this 2010 update.

The Project area is more or less consistent with the area referred to as the Westside Water Management District on the Stanislaus County website: http://gis.stancounty.com/giscentral/public/map/esri/flex/waterAtlas/index.jsp#

The area can generally be described as the lands of Stanislaus County west of the San Joaquin River.

Discussions amongst stakeholders—Formal discussions about limited water supplies in the Project area have occurred amongst the water purveyors in the last year. Issues of groundwater quality, quantity and storage needs have concerned the Westside County water stakeholders. These discussions, and the WA explanations of the IWRP process, led to the development of the proposed Project. The goal of the Project is to better manage the available water resources in the West Stanislaus County area in meeting the area's current

and future demands, and to develop ways to ensure those resources are more reliable and of a higher quality than current conditions.

Project's Main Focus—The reliability of the supplies is one of the most fundamental concerns to be addressed by the Project. Given the wide variety of water users and uses in the area, having some form of local water storage appears to be a key component of the reliability problem. The Project will focus on potential of local groundwater storage, and the potential for groundwater banking. It will focus the banking and storage opportunities on where the 6 creeks enter the study area and their alluvial deposits. It will determine if floods waters can be diverted and become source water for storage.

The Project will review DWR Bulletin 118 data, and other past groundwater studies of the area, municipal and private well logs and pumping records, and conduct soil borings and computer modeling in areas that appear conducive to groundwater recharge. It will also complement the flood control work planned for Orestimba Creek, currently being conducted by the County and the Army Corps of Engineers. The preferred flood control method for Orestimba Creek may provide groundwater recharge potential near the City of Newman.

The State has developed a series of water management strategies and desired outcomes that are closely aligned with the objectives of the Region. Many of the items on that list are actions that will be undertaken with this project and the implementation of the plan in general. To illustrate the similarities this project examines the parallel between the State's goals (**bold**), regional objectives (*Italics*), and the proposed project.

Ecosystem Restoration – *Plan Objective #1 Provide Reasonable Opportunity to advance ecosystem restoration through balanced project implementations.* The banking project will provide operational flexibility for the water resources to the area, which minimizes the conflicts associated with Delta pumping restrictions. Make use of local flood waters to recharge the groundwater basin will reduce agricultural discharges to the local water ways improving water quality in the affected San Joaquin River ecosystem.

Environmental and Habitat Protection and Improvement – *Objective #2 Develop Regional Solutions that protect environmental and habitat concerns and provide potential for improvement.* Banking program could provide storage for surplus supplies held by federal or state wildlife agencies for later extraction. Additionally the recharge areas may provide opportunities for migratory birds.

Water Supply Reliability – *Object #3 Improve south–of-delta water supply reliability by an average of 25%.* The Groundwater banking program would provide an essential buffer against dry year shortages by preserving the utility of wet year supplies. The banking also provides the needed seasonal storage the link between recycled water generation, year round, and irrigation needs, seasonal.

Flood Management – *Object #4 Minimize risk of loss of life, infrastructure, and resources caused by significant storm events by utilizing uncontrolled flow beneficially.* The groundwater recharge areas would promote the diversion of flood waters into these designated flood areas to help recharge the groundwater basin. These efforts should significantly reduce downstream flood issues.

Groundwater Management – *Objective #5 Maximize utility of Regional aquifers while reducing potential for overdraft.* The project seeks to maximize the potential of the confined aquifer by locating the recharge areas where access to the confined aquifer is possible, where the creeks enter the San Joaquin River valley.

Recreation - *Objective #6 Consider recreational potential in project development.* The groundwater recharge basin areas could be wet 8 to 9 months out of the year (basin would be dry during the peak irrigation season). The recharge areas will attract wildlife and presents opportunities for naturalists, bird watchers, and hikers.

Storm Water Management – *Objective #7 Capture storm water for higher beneficial use whenever practicable.* The plan would diminish the discharge of storm flow by directing it though the recharge areas. The banking program could provide important storage of captured storm flow for use at more advantageous times.

Water Conservation – Objective #8 Always promote and enhance water conservation. The banking program provides a means of storing season recycled water flows to that they are more readily available for the irrigation season. In addition, participation in this program requires the City of Patterson to expand their conservation efforts helping reduce the City potential impact on the groundwater basin the future.

Water Quality Improvement – *Objective #9 Develop regional solutions that provide opportunity for water quality improvement.* The project will utilize storm flows and recycled water from City of Modesto as two of the sources for recharge of the groundwater basin. Both of these sources have lower TDS levels than background groundwater for the area. These sources may aid in improving groundwater quality in the area over time. In addition capture of the storm flows will reduce agricultural discharges to the San Joaquin River.

Water Recycling – *Objective #10 Always promote and enhance water recycling.* Recycled water is potentially a very reliable source water to the area. The City of Modesto is currently working with Del Puerto Water district to bring recycled water to the area. Winter storage of this would be needed and the groundwater banking program could provide that storage. Additionally, the City of Patterson is in discussion with Modesto about the possibility of expanding the recycled program to serve the City's irrigation needs. Other recycled water opportunities will be identified by the study.

Wetlands Enhancement – *Objective #11 When Possible, align projects to complement existing wetlands.* A side benefit from the recharge areas may be that it creates seasonal habitat for migratory water fowl. There may also be benefits to riparian creek vegetation that would result from the capture of storm water flows.

The Project will also address local water resources and demands, and outline feasible infrastructure projects which can be put into place to better meet the area's water needs.

CEQA – The project anticipates completing CEQA documents for the preferred alternative. Given the variety of water users and interests that are participating in the project it is anticipate that CEQA issues will be identified and addressed as the project progresses and

that the preferred alternative will include in its consideration CEQA issues and how they would be addressed.

Project Setting - Local Creeks

Initial groundwater recharge/banking opportunities will focus on the six creeks and their alluvial deposits that enter the study area on the west since it is anticipated that the greatest opportunity for groundwater recharge locations will be found in these locations:

Ingram, Kern and Crows Creeks **–** Very little information on flood or drainage issues related to these creeks was found during this study write-up, however, their alluvium deposits may offer ground water banking opportunities.

Del Puerto Creek **–** Del Puerto Water District is conducting studies to explore the possibilities of surface storage within the Del Puerto Creek watershed. Additionally, recent studies completed by the City of Patterson suggest that groundwater recharge areas may exist where the creek cross Interstate 5 and Delta Mendota Canal. The Patterson study suggested that the creek's interaction with the Corcoran Clay layer may allow for recharge of both the upper and lower acquifers in this area. Flood flows on Del Puerto creek may offer significant recharge possibilities through expanding flood plains into areas of coarse alluvium.

Salado Creek – Salado Creek enters the study area just south of the City of Patterson and then turns northeast and continues through the center of the City, conveyed by pipes and open channels. Flood problems with this creek have been a historical problem for the City of Patterson.

Orestimba Creek – Several studies have been completed on the flooding of the City of Newman from Orestimba Creek. The Army Corps of Engineers recently completed a study that recommends creation of levees around the City of Newman to protect it from the high creek flows. Diverting high winter flows to groundwater recharge areas may be compatible with the Corp's plans.

Project Stakeholders

The stakeholders are multiple water purveyors in the area in addition to private water users. A summary of the water purveyors is shown in the table below. A brief description of each is provided in the paragraphs below. The list includes both urban and agricultural water users. We were unable to identify any American Indian tribal interests within the study area as of the date of the project submittal. We have made a Native American Heritage Commission Tribal Consultation list request, will add interested parties to the program when they identify themselves.

Table - Local Water Purveyor

Water Purveyor	CVP Rights Holder	SWP rights Holder (ac-ft/yr)	Ground-water User (ac-ft/yr)	River Rights Holder	Participant in this Study	Dis-Advantaged Community	2010 UWMP Applies
Urban							
City of Patterson			X(3,054)		X		X
City of Newman			X(1,322)		X		
Town of Westley			X(105)			X	
Town of Grayson			X(95)		X	X	
Town of Crows Landing			X(119)		X	X	
Stanislaus County			X(3,000)		X	(X)	
Western Hills Water District		X(329)			X		
	CVP Rights Holder	**SWP rights Holder**	**Ground-water User**	**River Rights Holder**	**Participant in this Study**	**Irrigated Acres in study area**	
Agricultural							
Patterson Irrigation District	X		X	X	X	13,150	
West Stanislaus Irrigation District	X		X	X	X	21,676	
Del Puerto Water District	X		X		X	30,000	
Central	X			X	X	20,000	

California Irrigation District							
El Solyo Water District				X		3,781	
Twin Oaks Irrigation District				X			
Oak Flat Water District		X				2,158	
Eastin Water District						3,430	

Urban Water Users

City of Patterson – The City currently serves water to approximately 20,000 residences. With the approval of the current general plan, the population could increase to 50,000 in the next 40 years. Currently, the city's only water supply is groundwater. Recent studies have indicated that groundwater supplies are limited and that water quality is degrading.

The City's wastewater plant is currently a pond system. The City treats flows both from the City and from Diablo Grande development area (Western Hills Water District). The City will need to construct a wastewater treatment plant in the future. The City may opt to have the City of Modesto treat their wastewater in the future. If so, the City would make use of the recycled water produced by Modesto and may join the North Valley Regional Recycled Water Supply Project that Modesto and Del Puerto Water District are doing together, discussed more below. The City's recycled water supplies would be a possible source of supply to the groundwater recharge program.

Additionally, both Salado and Del Puerto creeks run through the Patterson service area and have flooded portions of the City in recent years.

City of Newman – The City has approximately 2,800 connections for potable water service a population of about 9,500. The population is expected to increase to XXXX in the next XX years. The City's sole source of water is groundwater, and water quality problems have increased over the last several years. In addition, the City routinely risks flooding from Orestimba Creek.

The City of Newman operates a wastewater treatment plant. The flows generated by the plant are currently used as irrigation water for City-owned farms. This study assumes that Newman will continue with this current disposal practice into the future.

Town of Westley – Potable water services provided by local Community Service District and services are contracted out to the Stanislaus County Housing Authority. Westley qualifies as a disadvantaged community. The town has a population of less than 1,000 people. The

town's sole source of water is groundwater and the quality is very poor. The town lies between Kern (south) and Ingram (north of town) creeks.

Town of Grayson – Potable water service to the town is provided by the City of Modesto. Water supply is groundwater and the quality is very poor. The town has just over 1,000 residences. The town is just east of Westley adjacent to the San Joaquin River and like Westley lies between Kern (south) and Ingram (north of town) creeks. The town qualifies as a disadvantaged community.

Town of Crows Landing – Potable water service is provided to 109 residential and 22 commercial connections through two groundwater wells. The distribution system is failing and the town is actively seeking assistance from County public works and Redevelopment Agency. This is a disadvantaged community.

Stanislaus County—The County has taken and active role in almost all drainage related activities in the proposed project area. Recent focus has been related to the study and solutions associated with flood flows on Orestimba Creek. In 2004 Stanislaus County took ownership of 1,524 approximate acres (via an Economic Development transfer from NASA) for job generating industrial development to include a general aviation air facility. This project is still in the very early planning stages and is expected to complete the requisite CEQA process during calendar year 2011.

Western Hills Water District—The water district serves the Diablo Grande Development. The District's water rights are through the state water project through an agreement with the Kern County Water District. Water reliability has been a concern with the reduced pumping from the Delta. The City of Patterson treats and disposes of all of Western Hill's wastewater.

<u>Agricultural Water Users</u>

Patterson Irrigation District (PID)– PID is located on the east side of the City of Patterson between Highway 33 and the San Joaquin River. There are just over 13,150 acres of irrigated land in PID. PID has rights to the Central Valley Project water and also has pre-1914 rights to the San Joaquin River. The district has also installed wells and is looking to utilize groundwater in the future to help meet district demands. PID is not short on water. PID has excess supplies in certain years that could be utilized within the groundwater banking program.

West Stanislaus Irrigation District (WSID). WSID is located just west of Highway 33, north of the City of Patterson and is bordered on the east by PID and on the west by Del Puerto Water District. There are just over 21,000 acres in WSID service area that are irrigated. WSID has rights to both CVP water and to water from the San Joaquin River. WSID has also recently received state grant funding to install 7 groundwater wells. Similar to PID, WSID has been able to meet its demands in all water years and could be a source for water for storage if the project is found to be feasible.

Del Puerto Water District (DPWD). DPWD is located along Interstate 5 and extends from near the town of Westley south to below Santa Nella. DPWD has over 55,000 acres of land of which almost 44,000 is irrigated. DPWD's only current source of water is the CVP project. They are very water poor. They have started to address the use of groundwater in the area, recently receiving grants for the installation of 20 wells from DWR. DPWD is

actively working to bring recycled water to their service area from the cities of Modesto and Turlock, the North Valley Regional Recycled Water Supply Project (NVRRWSP). The recycled water has a 12-month delivery, and thus, DPWD is looking for storage options for this water so that it can be used during the 8 month irrigation season. Thus, it is anticipated that, if feasible, the recycled water from the NVRRWSP would be an additional source of water to put in the bank.

Central California Irrigation District (CCID) – CCID is an exchange contractor. They are located south of PID and East of DPWD. CCID receives their water from the San Joaquin River rights and an exchange agreement with the Bureau of Reclamation for CVP water. They have some concerns with water reliability because of the recent delta issues. However, they have been able to meet their customers' demands in all years. Additionally, Orestimba Creek runs through Region 8 of the District and the flood issue is a large concern for the district. It is anticipated that CCID may be both a supplier to, and a user of, the groundwater banking that the project is looking to establish.

El Solyo Water District (ESWD)– This district has 3,781 acres of irrigated land located just west of the San Joaquin River near the confluence of Ingram Creek. The district is a pre-1914 San Joaquin River rights holder. Similar to PID, WSID and CCID, El Solyo has been able to meet it demands in all years and thus, may be a potential supplier to storage program.

Twin Oaks Irrigation District (TOWD) -- located east of PID and North of CCID along the San Joaquin River.

Oak Flat Water District (OFWD)–Includes approximately 2,158 irrigated acres located along I5 between Salado and Crow Creeks. The District has a 5,700 ac-ft allocation to the state water project from the California Aqueduct. Water reliability is a concern.

Eastin Water District (EWD)–This district has 3,430 acres of irrigated land between DPWD and CCID south of Crow Creek. District was formed by LAFCO in 1999. District is securing contracts for water through CCID.

Detailed Work Plan/Scope of Work

The Project will address multiple state standards and WIRWP Objectives (see Project Background). The project is a comprehensive plan to manage the area's water resources, focusing on artificial recharge and banking, built in combination with flood plain expansion will meet area plan objectives and while maintaining state standards. It is intended that the banking program would ultimately make use of storm water flows, excess water rights during wet years, and recycled water either generated locally or imported.

Task 1 – Define Local Groundwater Conditions and Recharge Possibilities

1.1 Define local groundwater characteristics in the area. Task will include research of available library data on groundwater and hydrogeology in the area. Work will help define both the upper and lower aquifers and try to determine estimated use and available quantities and qualities of groundwater, as well as potential well yields throughout the study area. Work will tier off of the local AB 3030 study that is being prepared by the San Luis Delta Mendota Water Authority for the area, as well as the groundwater banking study completed in 1998 also by the SLDMWA.

1.2 Based on data collected above, construct a hydrogeologic profile of the areas groundwater basin(s). Define water surface and ground elevations, groundwater movement within each aquifer. Define areas of historical groundwater elevation changes. Define areas where groundwater recharge would be most probable and beneficial.

1.3 Define water quality of the local groundwater, quality concerns, and potential quality issues associated with recharge program.

1.4 Recommend test soil borings in the areas for recharge. It is assumed that 12 potential recharge areas will be identified (2 per creek) and that each one will need at least 4 new borings to collect soil samples and conduct analyses (permeability) to characterize the recharge possibilities of the location. Data collected from the soil borings will be input to a groundwater software model to help define the estimated groundwater percolation and mounding created by a recharge program in either two dimensions or three dimensions.

1.5 Task will produce a report which will define the local groundwater occurrence and condition and identify areas where project proponents should focus their recharge efforts.

Task 2 –Local Drainage and Flood Control Efforts – Hydraulics and Hydrology

Six drainage water sheds discharge runoff from the hills to the west into the valley and the San Joaquin River to the east. Extensive conversations have occurred over the years associated with flooding from these creeks, in particular Orestimba Creek which flows through Newman, and Salado and Del Puerto creeks that flow through Patterson.

2.1 Review of each of the six drainage water sheds. Work extensively with the county to identify past hydraulic and hydrology studies and identify potential mitigation measures to the local flood issues. Particular emphasis will be given to potential areas where flood waters could be diverted to help recharge the groundwater basin.

2.2 Define local flood control measures would work will with groundwater recharge opportunities.

2.3 Provide report and diagrams which summarizes the findings for each water shed.

Task 3 – Define Local Area Water Demands

Both potable and non-potable demands will be identified as well as the potential conversion of agricultural land to urban/industrial land uses using existing documentation such as the local master plans or integrated water management plans..

3.1 Define both existing and future water demands within the study area.

3.2 Produce a memo which defines the demands for the area presently and into the future (e.g., 5, 10, and 20 years).

Task 4 –Determine Water Rights Currently Serving the Area

This task, when combined with Task 3, will define the rights/supplies and demands serving the area.

4.1 Summarize each agency's existing water supplies.

4.2 Define additional potential supplies available to the water bank resulting from storm water flows defined in Task 2 and potential recycled water supplies to the area. Also define the potential supplies that may be available to purchase each year from suppliers in the area with excess water supplies.

4.3 Define water supply reliability, and produce a memo summarizing Tasks 4.1 through 4.3.

4.4 Define the level of shortfall in supplies that may exist and the corresponding volume of storage that may be needed to increase the water supply reliability. Produce table that defines storage volumes needed or potential supplies available by agency, considering all water year types.

Task 5 – Define Current, Planned and Recommended Facilities (identified by the Project)

Facilities will include existing canals, pump stations, turnouts, wells, tanks, treatment plants, and well as planned facilities, such as new pipelines, wells and interties.

5.1 Define the facilities that each water purveyor has in the area.

5.2 Identify capacity limitations and availability.

5.3 Identify the existing and planned facilities with the proposed groundwater recharge locations and define facilities that would be needed to move water into the groundwater recharge areas and then subsequently back to areas of need when the banked groundwater is harvested.

5.4 Meet with regulatory agencies (e.g., U.S. Army corps of engineers, Department of Water Resources, Fish and Wildlife Services, Department of Fish and Game to identify potential environmental, biological, habitat, and cultural issues associated with the plan and/or individual facilities will also be identified. This information will be used to help define potential project constraints and potential mitigation possibilities. It is anticipated that

subsequent and more detailed environmental documentation on the project will occur as individual infrastructure projects and programs are identified by the study.

5.5 Task will summarize the facilities and capacities to move water into and out of the banking program. It will then define the projects needed to that are not currently in place or being constructed by others. Each projects costs will be identified as well as the anticipated capacity, construction constraints and/or phasing of for each project. Document will include figures showing where existing, planned and recommended facilities are located.

Task 6 – Recommendations and Conclusions

Recommendations will be given on potential groundwater banking opportunities and the related infrastructure projects, programs and agreements that would need to be put in place to move the Project forward. It is anticipated this document will be used as the basis of an establishment and potential on-going operations plan for the bank program

6.1 Review the collected data and collaborate with project participants.

6.2 Recommendations will include estimated costs for water generated from the program, anticipated yields or increase reliably associated with program implementation, and anticipated economic benefits to the area.

Task 7 – Define Project Costs and Schedules and Phasing

Cost estimates and timelines will be determined from the facilities identified in Task 5.

7.1 Prepare cost estimates and project timelines for each infrastructure project identified (Task 6) and the estimated level of environmental work that will be needed.

7.2 Indentify fair share funding of each facility and potential outside funding sources which may be available.

7.3 Address facility operations, i.e. who owns and operates each facility and what type of agreements may be needed to make operations work.

7.4 Conduct a study on the potential economic impacts to the area based on the potential increase in supply reliability based on the report's findings.

7.4 Produce a document which defines each project, corresponding costs, construction schedule. The produce would be comparable to a capital improvements program.

Task 8 – CEQA

CEQA analysis would be completed for the preferred alternatives.

8.1 Environmental documentation will be completed for the preferred alternatives. The scope of work for the environmental document will be dependent on the alternatives. It is anticipated that given the number of agencies involved in the formation of this project and the wide array of water interests that are represented that many CEQA related issues, and means to address them, will be identified during the study.

Task 9 - Project Management

A large number of stakeholders are involved in this Project. Given the scope of the project, it is unlikely that a single consulting firm will be able to complete the Project. Several sub-

consulting contracts to a prime contractor will likely be issued and will require extensive project management. Familiarity with similar project will be a key characteristic of the Project Manager.

9.1 Conduct regular stakeholder meetings to discuss project findings and to identify the path of the studies.

9.2 Update the board of directors, supervisors, or council of each stakeholder on the Project's status and findings through monthly Project meetings and status reports.

9.3 Ensure the Project is proceeding according to the schedule.

Attachment 4 - Budget - West Stanislaus County Groundwater Recharge and Water Resources Project

Task	Description	Hours	cost	Grant Funding (75%)	Local Funding Match (25%)
1	Define Local Groundwater Conditions and Recharge Possibilities	$ 180			
1.1	Library research on well data	40	$ 7,200		
1.2	Hydraulic characterisation of Groundwater basin	224	$ 40,320		
1.3	Define Water Quality	80	$ 14,400		
1.4	Soil Borings (12 x 4 =48)		$ 120,000		
1.5	Recommendations	60	$ 10,800		
		404	**$ 192,720**	**$ 144,540**	**$ 48,180**
2	Local Drainage and Flood Control Efforts – Hydraulics and Hydrology				
2.1	Review of Drainage Sheds	200	$ 36,000		
2.2	Detail specific issues for each Shed	80	$ 14,400		
2.3	Recommendations	60	$ 10,800		
		340	**$ 61,200**	**$ 45,900**	**$ 15,300**
3	Determine Water Rights Currently Serving the Area				
3.1	Current Each agency	140	$ 25,200		
3.2	Recommendations	60	$ 10,800		
		200	**$ 36,000**	**$ 27,000**	**$ 9,000**
4	Water Supplies in Area				
4.1	Define water supplies by purveyor	120	$ 21,600		
4.2	Define potential area storage needs	40	$ 7,200		
4.3	Supply Reliability	24	$ 4,320		
4.4	Recommendations	24	$ 4,320		
		208	**$ 37,440**	**$ 28,080**	**$ 9,360**
5	Define Current, Planned and Recommended Facilities				
5.1	Define each agencies existing facilities	160	$ 28,800		
5.2	Define Exisitng Capacities	24	$ 4,320		
5.3	Define facilities needed	120	$ 21,600		
5.4	Regulatory Agency and Environmental issues identification		$ 40,000		
5.5	Recommendations	24	$ 4,320		
		328	**$ 99,040**	**$ 74,280**	**$ 24,760**
6	Recommendations and Conclusions				
6.1	water sheds	60	$ 10,800		
6.2	banking program facilities	40	$ 7,200		
		100	**$ 18,000**	**$ 13,500**	**$ 4,500**
7	Define Project Costs and Schedules and Phasing				
7.1	Recommendations for each of the 6 water sheds	144	$ 25,920		
7.2	Recommendations on banking program, yields	48	$ 8,640		
7.3	Recommendations on facilities needed	120	$ 21,600		
7.4	Economic impact study		$ 40,000		
7.5	recommendations on supplemental environmental work	80	$ 14,400		
		392	**$ 110,560**	**$ 82,920**	**$ 27,640**
8	CEQA				
8.1	Environmental Documentation		**$ 240,000**		
			$ 240,000	**$ 180,000**	**$ 60,000**
9	Project Management				
9.1	Stakeholder meetings (15)	80	$ 14,400		
9.2	Board and council meeting (25)	100	$ 18,000		
9.3	Project management	200	$ 36,000		
		380	**$ 68,400**	**$ 51,300**	**$ 17,100**
	Totals	**2,352**	**$ 863,360**	**$ 647,520**	**$ 215,840**
	Grant Funding = 75%		$ 647,520		
	Local Funding Match = 25%		$ 215,840		

Attachment 5 - Schedule - West Stanislaus County Groundwater Recharge and Water Resources Project